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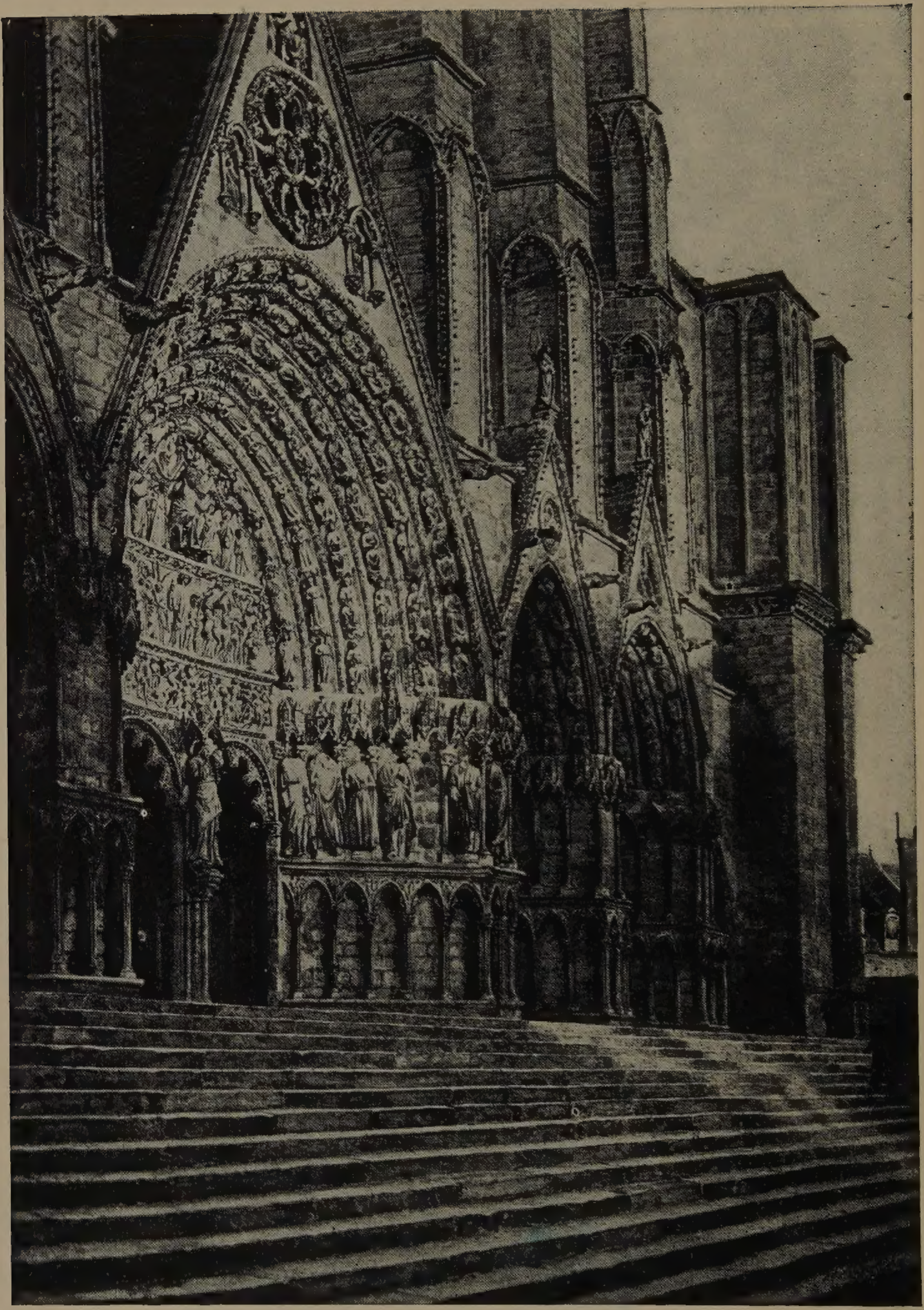
ARCHITECTURE AND THE ALLIED ARTS



The Portals of Bourges (*after Rooke*)

B79

ARCHITECTURE AND THE ALLIED ARTS

GREEK, ROMAN, BYZANTINE, ROMANESQUE AND GOTHIC

By

ALFRED MANSFIELD BROOKS

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Illustrated

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TO

R. S. B.

"The plum broke forth in green,
The pear stood high and snowed."

"Il nous a paru difficile de rendre compte des transformations successives des arts de l'architecture sans donner en même temps un aperçu de la civilisation dont cette architecture est comme l'enveloppe, et si la tâche s'est trouvée au-dessus de nos forces, nous aurons au moins ouvert une voie nouvelle à parcourir, car nous ne saurions admettre l'étude du vêtement indépendamment de l'étude de l'homme qui le porte."

—*Viollet-le-Duc.*

"In studying history it must be borne in mind that a knowledge is necessary of the state of manners, customs, wealth, art, and science at the different periods treated of. The text of civil history requires a context of this knowledge in the mind of the reader."

—*Sir Arthur Helps.*

Acknowledgment is due to the Birmingham Art Gallery for generously allowing me to reproduce several beautiful drawings of mediæval architecture by T. R. Rooke.

A. M. B.

PREFACE TO THE SECOND EDITION

The fact that a new edition of this book is called for indicates, I hope, that the laity for whom it was written found it useful. By laity I mean, quoting Otto H. Kahn, "the masses of the American people susceptible to the message of true art" . . . who, "once they have become imbued with correct standards of appreciation adhere to them and apply them"; those yearly increasing masses of men and women who feel the "urge of beauty," who read and travel, or save in order to travel later on.

This book is about architecture chiefly. Architecture, which is the most practical and conspicuous of all the arts, as well as one of the loveliest, has made notable progress in America during the past two or three decades. One has but to compare the dwellings, school-houses, churches, business buildings, hospitals and railway stations, large and small, public and private, of the eighteen-nineties with those of the nineteen-twenties, to be convinced. But this is not the same as saying that we are perfect for we are very far from being so. However, there is cause to rejoice over the fact that the just passing and the just coming generation have made distinct progress toward becoming an artistic people in the sense meant by Viollet-le-Duc when he said that a people can not be artistic "unless art pervades all the forms to which its hands and its intellects have given birth." "Art," says Rodin, "is the pleasure of the mind which searches into nature and which there divines the spirit by which nature herself is animated. It is the joy of the intellect which sees clearly into the universe and which recreates it with conscious vision." To make this even plainer, I quote again; this time from *The Artistic Ordering of Life,* by Albert S. Cook. "The root" of "the word *art*" which is "found in a considerable number of words in Greek and Latin, is the biliteral one *ar,* meaning 'to join or fit together.' Two ancient words, from the same root, chance to have assumed an identical form in English: one stands for a product of God's art, and one of man's. I refer to the word *arm.* As a member of the human body, it signifies that which is joined or fitted, at the shoulder, to the shoulder-blade; this, then, is the product of God's art. As a warlike implement, it is a product of man's skill in joining or fitting together; no one who considers the derivative term, *armor,* needs to be told how in the Middle Ages, scale was lapped over scale, or link welded within link."

Whatever is joined or fitted together perfectly must be possessed of harmony; must be harmonious, whether the fitting or joining produce what we know as a work of architecture, or a work of any other art. And whatever is harmonious is beautiful. Hence the plain meaning of Dante's words: "Men call a thing beautiful when its parts correspond as they ought, because pleasure results from their harmony."

To return to the distinct progress which we have made towards becoming an artistic people. It is due largely to the inherent good taste and improved training of our architects in general, and to the marked increase of interest in art displayed by our universities and colleges during the past ten years. It is due, also, and in a much higher degree than is usually thought, or admitted, to the decided improvement in lay taste which is, and must always be, mainly a matter of self-education; of the individual will to know the difference between poor and good, good and excellent. Women's Clubs, Public Libraries, Art Museums and the Bureau of Education have had far-reaching part in our artistic advance during the last thirty years because they have awakened thousands to an interest in art by making knowledge of its works, and principles, everywhere accessible. It is so that popular curiosity has been stirred, and a wide-spread uniformity of interest aroused. Legitimate popularization of art, and the study of art, which means a serious and honest, if not deep concern with the subject as a whole, or in part, is not, as many a pedant would have us believe, the mockery and destruction of serious art-education and culture. Rather is it the means of laying the only foundation upon which such education can be furthered, and the edifice of culture can be reared among democratic peoples.

This book, with its many illustrations, was written to help on such ends, and it has been revised with the same ends in view. It is not meant to be comprehensive. It does not undertake to discuss mooted questions touched on. In it there is not a problem, æsthetic, philosophic, archæological, or a work of art described, but has had much, often very much, written about it, and over which learned disputes have been carried on, or are being carried on. We can not be too thankful for the victories of discovered truth which have come of such disputing, and yet shall, but for all such victories won and promulgated by the erudite among the special few, the hungry sheep still look up and are not fed; Mr. Kahn's "plain men and women of America," who naturally love beauty, and want it, and will have it, and are determined to appreciate it intelligently. For these this book is written.

In untechnical language, and in simple form, this book aims to present some of the essential principles of the design and construction which regulate not only architecture, but the allied arts as well. For those who wish to go on with the subject as a whole, or with any particular aspect of it, the bibliography cites sources learned, exhaustive, authoritative, delightful, but not, as a rule, suitable to the beginner who intelligently wishes to learn something about art in a limited, thorough so far as it goes, but not academic way; who is firmly persuaded that half a loaf, often less, is better than no bread.

ALFRED MANSFIELD BROOKS.

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ARCHITECTURE AND THE ALLIED ARTS

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AND
THE ALLIED ARTS

CHAPTER I

THE SIGNIFICANCE OF ART

Ancient art—the history and æsthetic value of ancient art—was not established in the minds of cultivated men as an essential of higher education much before the close of the eighteenth century. Winckelmann gave the modern impulse in this direction when he published his *History of Ancient Art* in 1763. But the art of Winckelmann was sculpture only, and the works on which he based his archæological research and art criticism were of Roman origin, or Roman copies of Greek masterpieces long since lost. Greek sculpture, of which we now know much—sculpture regarded as the supreme expression of Greek genius—was practically unknown to Winckelmann.

The art of classic architecture as understood and practised during the latter half of the eighteenth century, and the opening years of the nineteenth, on the continent and in England, was the art of classic Roman architecture; that art seen through the eyes of the Renaissance was by 1800 cursed, in that it was universally accepted as the one and only correct type of architecture, to be approved by cultivated people or practised in civilized communities.

It was not until the latter part of the eighteenth century that any direct investigations were made of the actual remains of Greek architecture. Such critical works as the *Antiquities of Athens and other Monuments of Greece, Measured and Delineated*, by Stuart and Revett, which appeared in the third quarter of the eighteenth century, mark a new epoch. From that time scholarly methods have directed the enthusiasm of individuals and groups of men along the lines of classical research. As a consequence the marbles of Ægina are in Munich, and the frieze of the Parthenon is in London. The marvelous treasure-trove unearthed by Doctor Schliemann at Mycenæ is of great importance, among many important results of the scholarly method. But the greatest of all results is that now, and for many years past, the whole subject of ancient art—sculpture, architecture, and the allied arts—plastic and graphic—has been regarded as an essential subject in the curricula of the great universities oversea, and in the foremost colleges and universities of the United States. It is, however, an amazing fact that at the present time three-quarters, by actual count, of the colleges and universities of the United States continue to ignore art.[1]

The study of ancient art has come generally to be regarded in the light of twofold usefulness—as a study leading to an understanding and appreciation of the purpose, and meaning, of beauty in art; as a necessity to any student wishing to get a firm grasp upon, and a really liberal knowledge of, history. The documents of history that have not been tampered with and the records that have not been changed are the monuments of bygone art. Archæology is the study of such art in the manner of an exact science. The study of ancient art when focused upon the laws governing the expression of beauty, and an appreciation of beauty as it appears in the works of man, is a corner-stone in the building of culture.

But while all this has been for a considerable time acknowledged in connection with ancient art, scarce three-quarters of a century have passed, since the mention of mediæval art, or of the art of the so-called Dark Ages—generally speaking, the mention of any art produced between 400 and 1300—was regarded as a reference to all that was uncouth, unreasonable and unlovely. In a single word, it was barbarous, as the eighteenth century called every form of Gothic art, and as the nineteenth century, inheritor of ignorant prejudice, reluctantly gave up doing. Viollet-le-Duc, great architect, profound scholar and devotee of beauty in art, whether ancient or mediæval, was the man who proved the necessity of the study of mediæval art, and fixed that study securely in the curricula of institutions of liberal learning. It was he who conceived and executed the idea of a museum of comparative sculpture in Paris, and by his wonderful critical writings made it clear to the benighted and prejudiced minds of his day that, instead of being barbarous, the architecture of the Middle Ages was extremely beautiful, that instead of being unreasonable, it was a miracle of logic; in a word, that it served the ends of use and loveliness, and that no art ever has done or can be asked to do more. In restoring and explaining the physical body of the art of the Middle Ages, Viollet-le-Duc gave new life to the spirit of that art which, at best, is as truly the embodiment of lovely reasonableness as the art of Greece. The debt owed by all English-speaking people to Ruskin in this connection is enormous, yet the fact must not be overlooked that while Ruskin taught many men to love the meaning and the forms of Gothic architecture he taught none to understand the fundamental principles of it. The same is true of William Morris. Intense, practical and highly poetic affection for detail, in the case of both these men, blinded them to that basic quality of architecture—regard for the whole irrespective of the parts, not to mention sound and reasonable construction.

To-day it is generally granted that the study of mediæval art is as essential to a full comprehension of mediæval history, as the study of ancient art to a full comprehension of ancient history. Its study, too, is recognized as an important element in culture and in the furtherance of the love of beauty. A careful comparison of the best architecture and sculpture of the Middle Ages with the best of similar works in classic art, bears striking evidence to the fact that those growths of thought and those forms of intellectual activity, which culminated in the art of the ages of Pericles and St. Louis, were parallel, although a millennium and a half apart; that mediæval art can bear comparison with classic; that in such study as results in a fair acknowledgment of their points of likeness and their points of difference, and in that catholic delight which is delight in both, lies one of the surest ways to thorough education in æsthetics and the history of art.

The greatest sculptor of Greece, Phidias, was the man who directed the building of the Parthenon. The greatest architect of the Renaissance, Michael Angelo, is the greatest sculptor since Phidias. The greatest of mediæval architects, those who built the cathedrals of Chartres, and Paris, and Amiens, were sculptors. These are sister arts. Painting is the third sister in the trilogy. Their relation to one another and their relative importance has never been more clearly stated than in Longfellow's *Michael Angelo.*

> "Ah, to build, to build,
> That's the noblest art of all the arts.
> Painting and sculpture are but images—
> Are merely shadows cast by outward things
> On stone or canvas, having in themselves
> A separate existence. Architecture,
> Existing in itself and not in seeming
> A something it is not, surpasses them
> As substance, shadow."

The purpose of this text is to point out some of the most marked characteristics of the plastic and graphic arts; of the architecture, sculpture, and painting of western Europe during the Middle Ages, and in narrow compass to trace back to their sources the chief influences which were brought to bear on the plastic and graphic arts of mediæval Europe, showing how, when and where, these influences mingled, and what the results were.

This text is intended to be a syllabus of artistic tendencies, illustrated by well-known and famous works of art. It is not a history of art. Its purpose is to serve students of mediæval history, as well as those who are interested in the development and history of art as an independent subject. It seeks to do the first as a complement to the text of civil history; the second by making clear some of the principles and conditions underlying those causes which brought about the change from Roman to Romanesque and Gothic; in other words, to show something of the setting of the stage on which the drama of mediæval history was acted, and to describe those objects of art (the origin and culmination of their forms) which, taken together, made the setting.

The past is known by its works. Of such works there are two kinds, civil and monumental. *Civil works* imply the conduct of life, the life of an individual or of a state. Written history is the record of them. They are not tangible or, except as influences, lasting. The election of a pope or the promulgation of an edict are examples.

Monumental works are the things which men make with their hands. They are tangible, and in themselves more or less lasting, as a church or a palace.

For an intelligent discussion of this subject, as of any subject, it is necessary to have a clear understanding of terms. We must begin with a working definition, first of art, then of the difference between plastic and graphic art.

Art is that by which anything is done, the idea of which exists in the mind. So Aristotle[2] defined it. Art is the power by which human beings make their thoughts known to one another. Art is the power of human expression. The expression itself, the thing which the human being makes, or does, is a work or an object of art.

The fact that human beings give material expression to thought establishes the validity of their claim to being called civilized, or cultivated. The degree of cultivation depends, first on the value of the thought expressed, and second on the intrinsic worth of the work of art produced. Meanwhile the beauty of such work is in proportion to the degree of exactness with which the form of the work corresponds to the purpose for which it was made, and the beauty or the nobility of that purpose; in the degree of precision with which the form of the work bodies forth the thought, and in proportion to the beauty of that thought. This requires explanation.

There is undeniable beauty in the way that a fine machine bodies forth with mathematical precision the intent of its maker. Every part fits every other, and the whole works perfectly. Every one admires such a machine and, under the present definition, it is a work of art. We may with reason be awestruck by it. We may even call it beautiful, although beautiful in this connection approaches the slang sense of the word in such common phrases as, of an automobile, "She's a beauty." Nevertheless we do not love the machine for its own sake. We are grateful for the sort of beauty which it has, but our gratitude is based on the convenience and physical comfort we can derive from it, and we admire it for what we can get out of it practically, and not for what it is itself. Its beauty lies in the expression of its practical adaptability to a practical end.

But there is in the world a very different sort of beauty. It is the sort of beauty that makes us love a starry sky reflected in quiet water, or the look of spring when willow stems flush red and buds begin to burst. Arrested record of this kind of beauty, artistic expression of men's thoughts about this sort of beauty, that praise which is expressed in our attempts to imitate this sort of beauty, praise—explanation really—which tends to make it better and more generally understood, hence coveted—this is essentially the beauty of art.[3] That thought which is the recognition of this beauty is inspired by nature and by life. It is the product of intellect and emotion brought to bear on nature and life. Works of art are tangible utterances, in endless variety, of this product. Art implies a transcript or likeness of the facts of nature and of life, along with some conveyance and explanation of the emotional meaning of these facts to the mind and heart of the artist. To delight and inform intelligent human beings is the province and glory of art. As by it comes man's solace, so also by it his joy. It teaches him the nature of reality, and it inspires him with faith in possibility.

Useful works of art are admired according to the degree of their usefulness. Works of fine art are loved, or are lovable, in degree as they declare the beauty and the meaning of nature and life in forms and shapes calculated to increase our appreciation of, and our affection for, "whatsoever things are lovely and of good report." A work of art implies thought, material and the power to compel the material to take such form as shall express thought; in other words, an idea, a medium and skill of hand. Art implies man's capacity to think variously in the terms of actual existence about what may or might exist, together with the power of hand to make sensuous expression of his thinking. Such sensuous expressions, works of graphic and plastic art, taken as a whole, constitute a universal language. They are a universally understood means for the dissemination of thought among the people of one generation, and for the conveyance of thought from generation to generation, irrespective of language. Thus is "art long," since it lives from past to present, and on into the future—while "time is fleeting," and tongues are neither stable nor universal.

The arts are divided naturally into two main groups with no clearly defined line of separation between the groups. In one group stand the arts that are concerned chiefly with the practical and physical needs of man; in the other, those arts which are concerned mainly with what is in no way of direct physical, or even practical, use to man. For example, men are better off physically for living in a well-built house, while their physical good is in no way increased because the front door of such a house happens to be carved, or flanked by ornamented columns. The former condition implies sound honest construction, or building. The latter implies more: namely, beautiful building. On this distinction it is reasonable to base the division, and from it derive the common name for the two great groups of arts—fine and mechanic. It must not be forgotten that the fine arts can not exist without mechanic art; that there can be no art without craft or technique, which means the power to manipulate the materials of art; to make the materials, the vehicle for conveying or expressing thought, take on any desired shape. The opening sentence of Sir Joshua Reynolds' *Fourth Discourse* is to the point:

"The value and rank of every art is in proportion to the mental labor employed in it or the mental pleasure produced by it." It would, however, be wrong to infer from this statement alone that Sir Joshua undervalued excellence of workmanship, for he did not, and in this he was at one with all great artists. Rather he thought of excellent workmanship, good technique (it is so named especially in reference to the fine arts), as all-important and as underlying all else.[4]

When so much has been clearly and firmly fixed concerning the mechanic and the fine arts it is safe to take up questions of difference. Such questions are numberless and many of them are comparatively unimportant. Others that are extremely important have never been settled absolutely, and probably never will be. In general, works of mechanic art are such (garden tools or houses) as have their reason for existence in man's physical comfort, or the improvement of his physical environment. Works of fine art are those (sonatas, poems, pictures) that give intellectual and emotional pleasure to man.

Leaving the vast domain of "arts"—of the arts considered as a whole—we come to a smaller but still very extensive realm of human thought which finds expression in what are called the plastic and the graphic arts.

The plastic arts are those that deal with shaping out (sculpture) or putting together (architecture) solid material, thus giving tangible expression to thought. Many important arts are included under the general head of plastic—such, for example, as the shaping of building material from clay (bricks), or modeling in clay (terra-cotta), not to mention ceramics—all sorts of pottery and porcelain. The glass blower and the metal-smith come, with many more, into this class.[5]

Graphic art is the art by which objects possessed of three dimensions, and variously placed in space, can be represented with a semblance of reality on a flat surface—pictures of every sort.

Under one or another of these heads come all works of art which make direct appeal to the sense of sight. In other words all the things with which civilized society surrounds itself: architecture which makes cities; sculpture and painting which are the adornments of architecture; furniture, pottery, glassware, objects of metal, and the unnumbered other things of daily use or pleasure in civilized communities.

Architecture ranks first among the plastic and graphic arts. In the majority of important instances, ancient and modern, sculpture and painting have figured chiefly as adornments for architecture. Many of the world's best statues and pictures have been produced in connection with architecture. It is the major art. The others are relatively minor. This distinction is based upon the comparative usefulness of the arts, a chief part of the preciousness of which resides in their beauty—strictly speaking, a quality not useful.

Civilization has often been compared to a stream; it should be added, a stream of which we know neither the source nor the end. At times within the memory of man the flow of this stream has been remarkably broad and clear and deep. At other times it has been narrow, shallow, muddy. Occasionally it has plunged like a lost river into the earth, or dried up like a spring freshet. But in reality this stream has never ceased to flow. The brook that "goes on forever" is the true symbol of it. Neither archæology nor history, peering into the past, can discover its beginning. Looking forward we see no end.

There was civilization thousands of years before Christ. Its witnesses—the works of art that imply it—reaching farthest back in time, imply other similar works of still earlier date. We may say, "At such a time our acquaintance with civilization begins; certain objects that we possess are the earliest known works of art." We can not say, "At such a time civilization began," or that any particular objects were the "first works of art."

Constantly exploring the records of the past, bringing the lost to light, through search and research, archæology and history extend their discoveries year by year. They trace the course of the stream a little farther, finding it deep, shallow, lost, as the case may be, but never its source. They discover earlier and yet earlier works of art, signs of civilization, but not the first of all works of art. "The unimaginable touch of time" long ago destroyed them.

Since we can not know the actual beginnings of civilization, its monuments being lost, and because we do not mean to cover the whole range of known civilization, it is reasonable for purposes of study to choose particular epochs, in the present case the mediæval period. But since the art of the mediævals—mediæval civilization—was founded largely on that of the Roman Empire, and indirectly on that of Greece, some knowledge of the art of Greece and Rome is essential to an understanding and appreciation of mediæval art. It might be urged, and reasonably, that to understand the arts of Rome and Greece it would be necessary to study the arts of those nations which achieved civilization earlier, Egypt, Assyria, Persia.

To this it may be answered that the influence of Greek and Roman art is active, and well-nigh universally so, in the world to-day; that it was so, though in less degree, in the world of mediæval Europe. Cultivated men of the thirteenth century were conscious, as such men are at the present time, of the tremendous influence of ancient Rome, while year by year they became more and more conscious of the finer and mightier influence of Greece. Unconsciously, then as now, but more so then, the world lay under the spell of those passed, yet present; dead, yet living civilizations. Shelley truly said of the Greeks:

> "On all this world of men inherits
> Their seal is set,"

and an old French poet, of Rome:

> "Living she was the world's chief ornament
> And dead is now the world's sole monument."

Upon modern civilization Egypt and Assyria exert no influence in the least commensurable with that of Greece and Rome, nor did they on the civilization of mediæval Europe. The gulf between those earlier nations and the Greeks and Romans is wider and deeper, and spanned by fewer bridges, than any gulf that has yawned between modern Europe on the one hand, and Greece and Rome on the other. Among many reasons for this two are preeminent.

The Romans and the Greeks produced a voluminous literature which treated of all sorts of subjects, and the European world has always possessed, though in greatly varying quantities, large stores of this literature. Those same peoples produced an enormous quantity of works of plastic and graphic art, many of which descended directly to the mediæval peoples, especially to the Italians.

The stream of civilization has never ceased to flow, nor did it grow turbid or shallow when, in the remote past, it moved north and west out of Egypt by way of Crete, and the islands of the sea, toward Greece. But when it reached Greece, and later Rome, it so broadened and deepened and cleared that men ceased in a measure to think consciously of its earlier course, and in a degree accordingly to be influenced by it. Generally speaking, modern civilization has forgotten that earlier course. On the other hand civilized society, and cultivated men, have never ceased, practically speaking, to be influenced by the tremendous force gathered by the giant stream of Greek and Roman history, art, culture, in spite of the fact that its course wavered, and its waters lessened, and at last stagnated, during the so-called Dark Ages.

To trace the course of this stream as it flowed through the Middle Ages, leaving endless useful, beautiful and wonderful memorials of itself, is the aim of this text. While we know no first source and never shall, it is universally agreed that there was a vast accession of living waters in Greek and Roman days, and that those waters, though diminished in the Dark Ages, were still sufficient to keep the mills of thought turning, the product of which mills is art. The flow increased mightily during the Middle Ages. The visible and acknowledged cause for this was Rome, and indirectly, Greece.

Mediæval culture, the expression and witness of which is mediæval art, was mainly founded on the remains of Latin civilization. It was in large part Roman.

Finally weakness at home—i. e., in Rome—and incessant attacks from abroad; the internal decline of power in the Western Roman Empire, together with the barbarian movements and invasions, came upon the stream of European civilization and rested on it like a long frost. Returning warmth, with the Middle Ages, freshly awakened zeal for liberty and learning, melted and augmented and set the waters free to flow whither they would, and they flowed through all Europe. The course of this stream is marked by monuments; monuments of the plastic and graphic arts which are the subject of this book; not all of them, as was said at the outset, but some of the most famous, some that are remarkable for size or ingenuity or beauty, one or all of these qualities—monuments directly expressive of the progress of art as it ran parallel with the civil history of the Middle Ages.

The first apparent split in the Roman Empire occurred during the first quarter of the fourth century, when the Emperor Constantine moved his court from Rome and established it on the shores of the Bosphorus. He chose the old Greek city, Byzantium, for his capital, and renamed it for himself, Constantinople. From then on there were to be two empires, or one empire with two capitals—Rome in the West, Constantinople in the East.

The sack of Rome, the victorious entry of her enemies in 476, announced the fall of the Roman Empire to all the world.

CHAPTER II

GREEK AND ROMAN ARCHITECTURE

From remote antiquity to the present time only two principles of building construction have been known. This statement remains true in spite of the variations that have from time to time occurred in the manner of applying these principles. The Greeks, whose architecture was of unsurpassed beauty, made use of one of these principles only. Both of these principles were employed by the Romans, whose constructions were of unrivaled size. These principles are the "post and lintel," used by the Greeks, and "the arch," together with the "post and lintel," which the Romans used.

The "post and lintel" (Fig. 1) principle of construction means upright supports, i. e., walls, columns, pillars, piers, made to carry the weight of horizontal beams or lintels. The supporting members must be strong enough to bear the weight of the lintels. This is the essential point in such construction. It is a method of building that can be used only when the materials are such as can be obtained in pieces of considerable length. The supports may be made up of many pieces, bricks for example, but the lintel must be a single piece long enough to span the space between the supports.

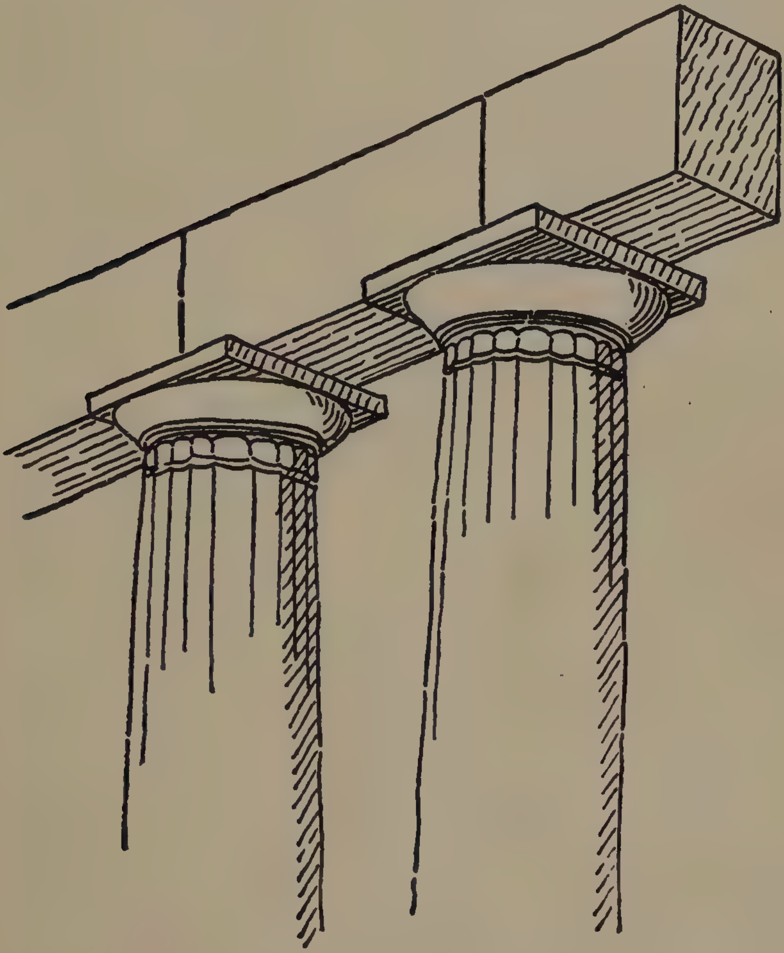

Fig. 1. Post and Lintel Construction

The arch (Fig. 2) principle of construction, as it was adopted and developed by the Romans, meant the use of semicircular arches, wherever it was necessary to span spaces between walls or piers. This must not of course be understood to imply that the Romans did not make use of the post and lintel, for they did, though their knowledge of the arch principle, and their wonderful applications of that principle, made possible all that is most truly characteristic of Roman architecture. It is clear then that the essential difference between Greek and Roman building lay in what may be called the span element; both, of necessity, using vertical supports, i. e., walls, columns, pillars, piers.

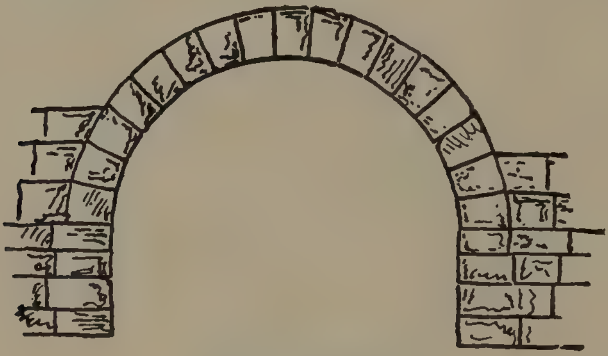

FIG. 2. ARCH CONSTRUCTION

The invariable span element of Greek architecture was the lintel.[6]

The typical span element of Roman architecture was the semicircular arch.

It has already been said that the essential condition of post and lintel construction is sufficient solidity, or strength, on the part of the post. It is relatively easy to get this solidity and strength because the maximum length of lintels depends on the nature of the materials employed, and can never exceed fixed and evident limits. This holds true of stone or wood, or any other material, out of which beams or lintels can be made. It is plain that the weight of lintels will vary in proportion to their length and thickness and that it is the weight of the lintels which decides what the dimensions of supports shall be. Hence it was possible for the Greeks to build their largest temples with relatively thin walls and slender columns, because such columns and walls would safely carry any obtainable lintels. Clearly, the advantage of such construction lies in its economy, the relatively thin walls and slender columns requiring comparatively little material. This in turn implies a further economy of labor and time.

There is however one great disadvantage in the post and lintel method. It is impossible to build interiors of considerable size, and not have them broken up by supports, or partition walls, on which to rest the roof.

The arch as a span element is more complex than the lintel, with the result that it is both more and less desirable than the lintel. Wherein it is more complex must be shown in order to make clear its peculiar advantages and disadvantages.

An arch, in building construction, is a curved span element. Roman arches were for the most part semicircular, or "round," as it is often expressed. The arch was made up of a number of individual parts: many (Fig. 3) when bricks were used, few (Fig. 2) as a rule, when stone was employed. The usual method of constructing an arch was, as at present, to set up a temporary wooden framework, or mold, called "centering," over which the arch was shaped, and on which the parts of the arch rested until all were in place, and the arch was able to stand alone. The same procedure obtained when concrete was used in arch constructions.

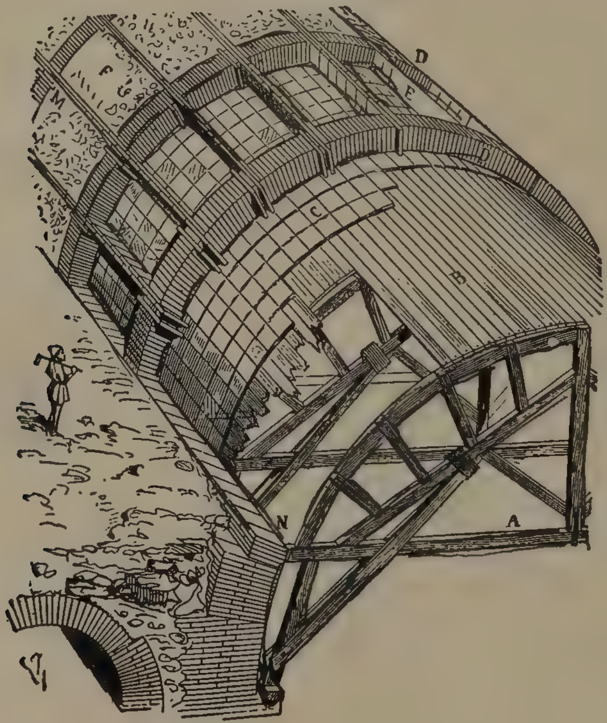

Fig. 3. Arch and Vault Construction

When stone was used the individual pieces, which were to form the arch, were cut into wedge-shaped blocks, the upper and the under surfaces of which are bounded by arcs of greater and lesser concentric semicircles. The sides of these blocks are bounded by flat surfaces; planes, which are identical in direction with the radii of the semicircles bounding the upper and lower edges of the arch. These wedge-shaped blocks (Fig. 2) are called voussoirs.

When brick was used, the individual bricks were supported during construction on a centering. The arch would be obtained by setting the bricks edge down and close together on the centering, separating or spreading them slightly at their upper edges so that the individual bricks rayed out like the sticks of a fan. The triangular spaces between brick and brick were filled with mortar.

An arch composed of individual pieces, voussoirs of stone, brick, or whatever else, each piece drawn downward by gravity, constantly tends to split apart, to push its individual pieces to either side and so allow the higher to fall through and the whole structure to destroy itself. This tendency to push apart is called thrust. Because it goes on always it has given rise to the accurately descriptive proverb, "the arch never sleeps." This thrust gives the arch as a span element its complex character as compared with the lintel. The latter exerts downward pressure only. The former exerts lateral push, or thrust, as well as downward pressure. The supports that carry the lintel need have only strength enough to carry the weight of the lintel. They are truly and solely supports. The supports of an arch on the other hand not only have to be strong enough to carry the downward pressure, or weight, of the actual materials of the arch, but they must be massive enough to overcome the thrust of the arch. This necessary massiveness resides in the weight itself, i. e., the weight of material in the support is so great that the thrust can not push it over or aside. In arch construction a support that has to overcome thrust is called an abutment, or buttress. The prime requirement for the safety of an arch is that the buttress have a weight which can not be moved by the constant thrust to which the arch subjects it. So long as this condition is maintained, the greater the weight of superstructure put upon the "crown" (the top) and the "haunches" (the sides of the arch) the more secure the arch becomes, because the individual pieces of which the arch is composed are pressed together the closer.

It is clear that great massiveness of wall and pier is essential to arch construction, whereas comparatively thin walls and slender columns are adequate for carrying lintels; that arch construction must greatly exceed lintel, in respect to the time, labor and material expended—in a word cost. So far then the advantage appears to be on the side of the post and lintel.

But there is another point of view. With arch construction it is possible to span or cover great spaces without any support other than that given by the enclosing walls, a thing not possible, as has been pointed out, with lintel construction. Furthermore, building material in small or comparatively small pieces, bricks or voussoirs of stone, is cheaper, more easily produced and more easily handled, than the single large pieces of stone required for lintels. Finally, the weight of superstructure that can safely be rested on an arch is practically unlimited. This is by no means true in the case of lintels.

This subject of the span element in architecture, and in the more restricted field of building construction, which is the essential foundation for architecture, is inseparably connected with the subject of roofs, in whatever form they may be constructed to-day, or have been in the past. On the distinctions already made between the lintel and the arch, as span elements, and in the different structural requirements of each, Greek and Roman roofing methods depended.

Little is known with certainty about the character of Greek roofs. It is not even known what the roof of the Parthenon was like. On the other hand a great deal is known of Roman roofs, many having come down intact to the present day.

The Romans constructed vast roofs out of brick, stone and concrete. The span element of these roofs was the arch. Such roofs are called vaults. Of vaults the Romans used three distinct varieties.

The first, the barrel vault (Fig. 4), was made up of a succession of round arches, of equal diameter, set close together. It requires support and abutment on both sides, throughout its length. This is so because at every point in the lines of impost (the springing point of an arch) this vault offers a weight to be carried, and a thrust to be resisted. It is simple in point of construction, but it is not economical in its demands. It has a further disadvantage. If a barrel vault is to be built, the walls on which it rests, the

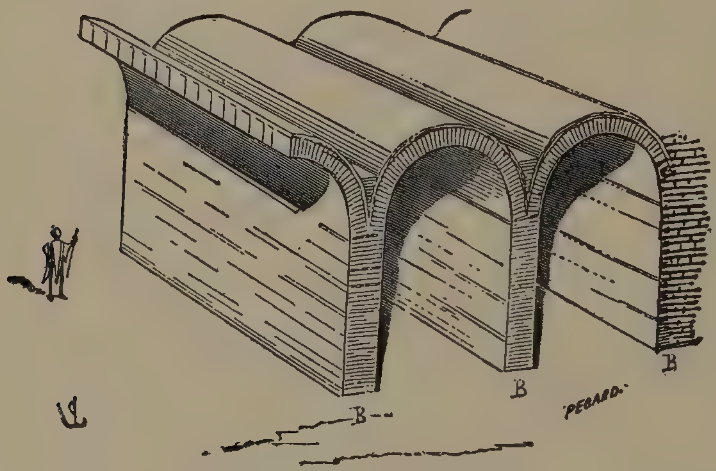

Fig. 4. Barrel Vaults

abutments, must of necessity be parallel. A rectangle is the usual form of enclosure beneath a barrel vault. It is possible however to construct the walls for a barrel-vaulted compartment on a curve, so long of course as those walls are kept parallel. This was often done by the Romans.

Where it is essential, or merely desirable, to have an abundance of openings, windows and doors, a barrel-vaulted compartment has one great disadvantage, for it is clear that such openings must be for the most part at the ends of the compartment; beneath the arch of the vault, and not beneath its impost. To cut many or large openings in the walls that support and abut a barrel vault would tend to weaken those walls as abutments by diminishing their mass, and consequently their weight. Furthermore, when such openings *can* be made compatible with safety, they are likely to be in a wall of such extreme thickness as to make them poor entrances for light. But suppose a compartment to be planned several times as long as it is wide. Obviously in such a case lighting done chiefly or entirely by windows in the ends of the compartment must be unsatisfactory because little light can reach the middle of the compartment, as in a tunnel for example. Barrel vaults are peculiarly suited for the roofing of underground passages, sewers and aqueducts, for the foundations of large buildings where extraordinary strength is demanded, and in all such places as require comparatively few openings. The Romans built barrel vaults over rectangular compartments, for example the Arch of Titus, or the side aisles of the Basilica of Constantine.

The second variety of Roman vault is the elliptical groin vault (Fig. 5). It was made by the interpenetration of two barrel vaults of equal diameter, hence equal height, at right angles. It is an intersecting vault, because its parts, barrel vaults, intersect or cross each other. The sharp edges in which the two intersecting barrel vaults meet are called groins, and because the groins are elliptical, the name elliptical groin

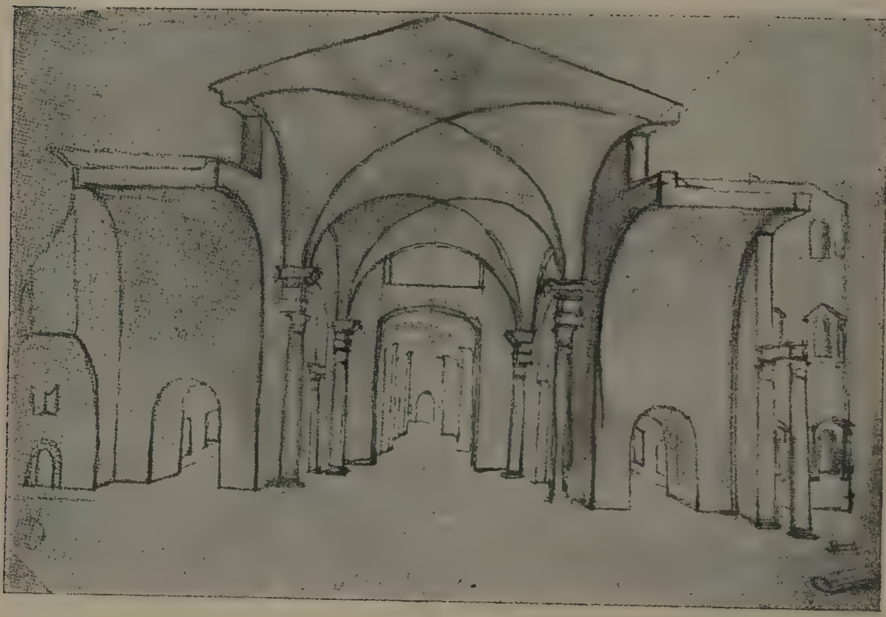

Fig. 5.
Elliptical Groin Vault, from a drawing in the Uffizi, Florence

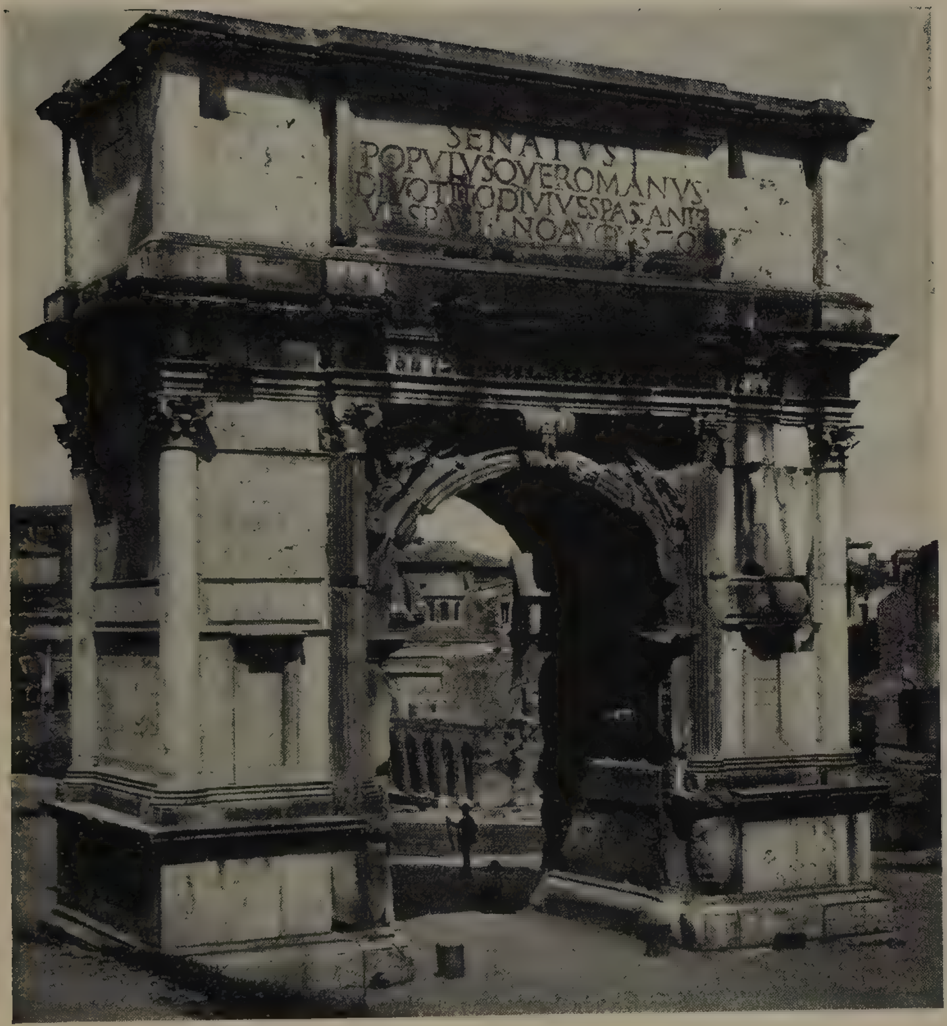

FIG. 6. THE ARCH OF TITUS

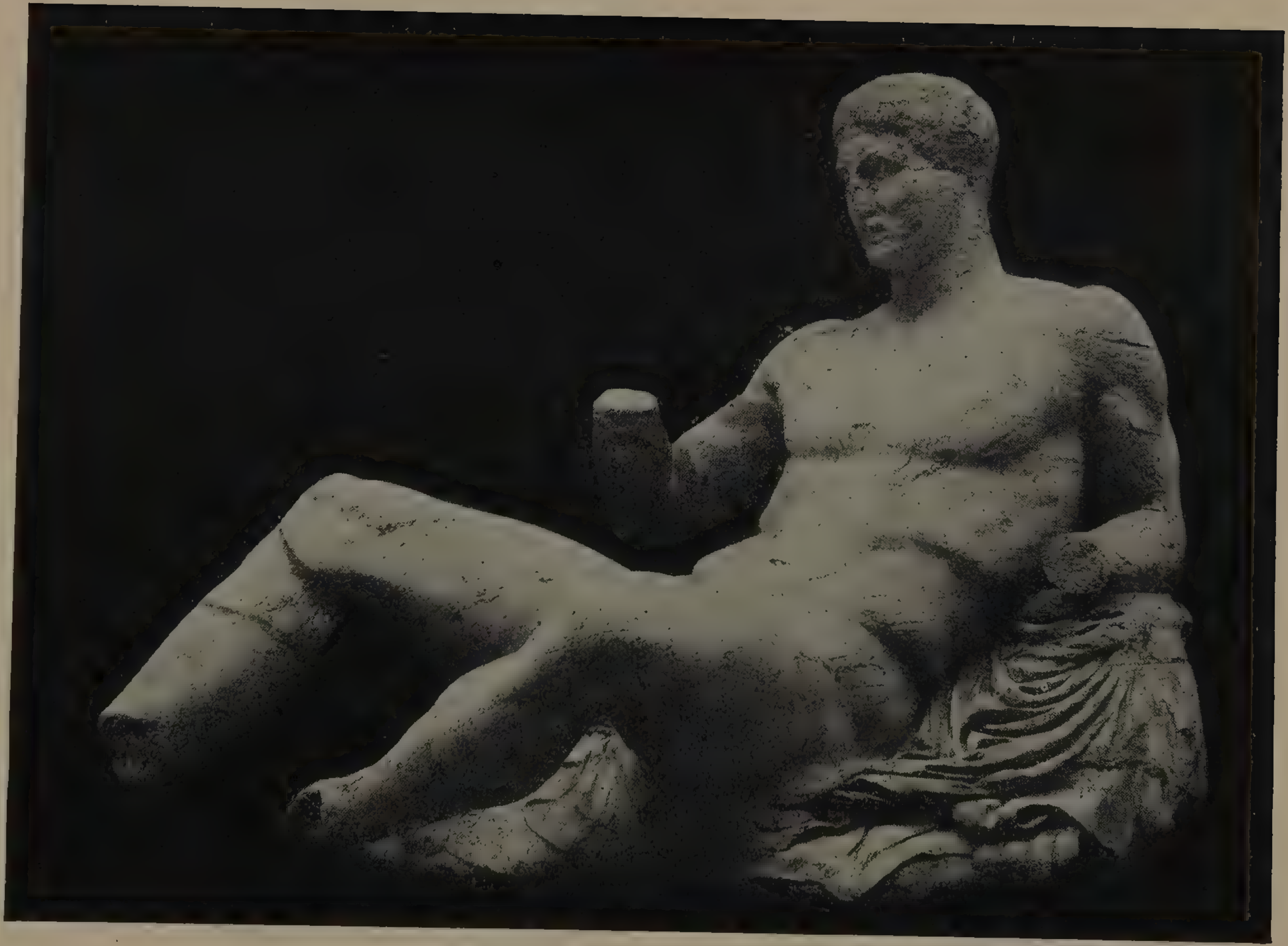

FIG. 7. THESEUS OF THE PARTHENON

vault is given to this variety. The supports of such a vault must be at its four corners. Because the parts (barrel vaults) of which it is formed are equal in diameter, and intersect at right angles, it follows that in plan the vaulting compartment must be a square, and can be nothing else. In this variety the thrusts are gathered along the groins, and are concentrated near, and at the impost of the groins; i. e., on four supporting piers, one each at the four angles of the vaulting compartment. These supports must have enough massiveness to overcome the thrusts of the vault, as well as strength enough to carry its weight. In other words the supports are also abutments or buttresses.

The advantage of an elliptical groin vault over a barrel vault is twofold. The compartment beneath the vault can be entered, and lighted, by any number of openings in each of the four sides; as a matter of fact there need be nothing beneath the arch, and between the piers, on any one of the four sides of the vaulted compartment. Further, the expenditure of time, labor and material required for building these supports is somewhat less than that required for the continuous walls which form the supports and abutments of a barrel vault.

The disadvantage of an elliptical groin vault lay in the necessity of placing it over a square compartment—over such and none other.

The third variety is the hemispherical dome (Fig.

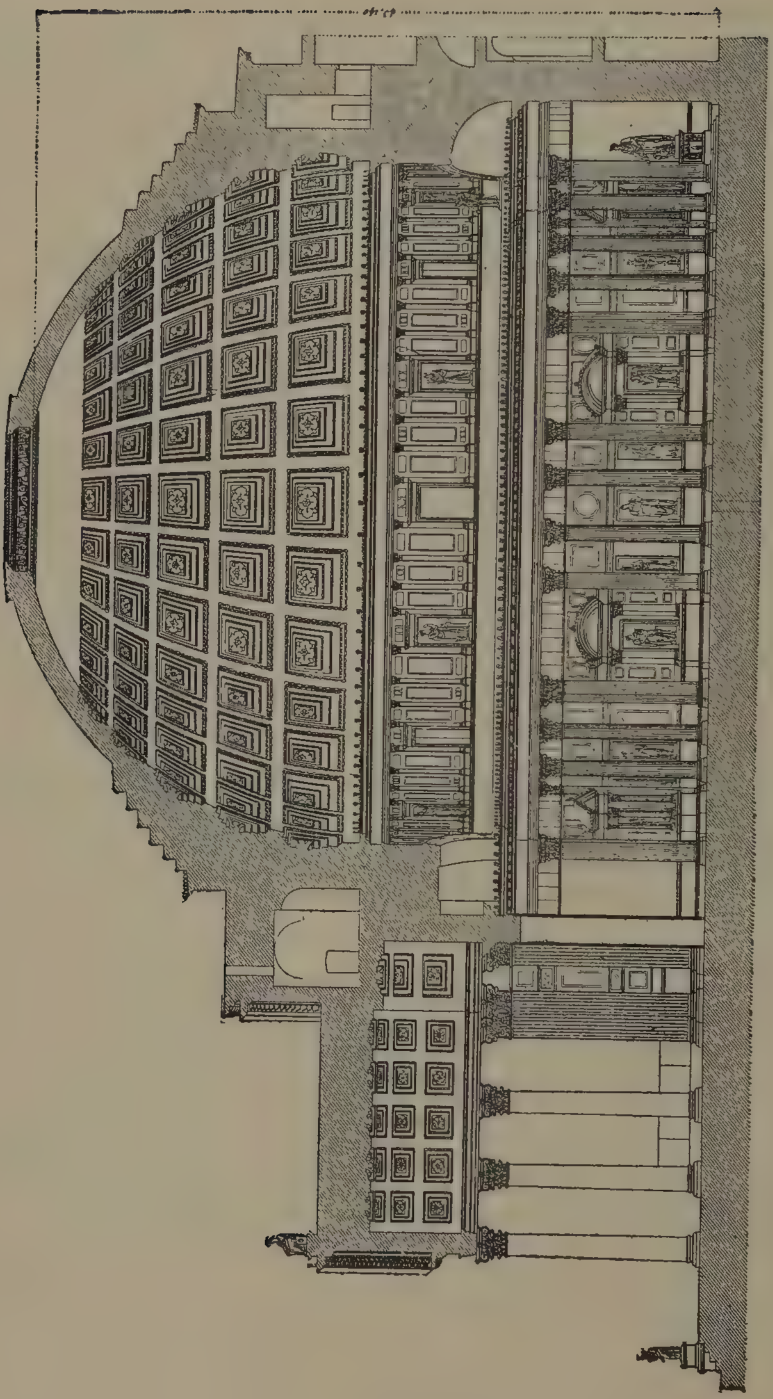

Fig. 8.

The Pantheon, a Cross-Section

8), a vault composed of semicircular arches of equal diameter, the crowns of all being at the same point, and all the extremities in a circle which forms the base of the dome. Such a vault exerts vertical weight and lateral thrust at every point in its impost, i. e., in or around, its circular base. Since this impost is continuous (in a circle), it follows that a continuous support and abutment will be required. The dome was, of all Roman vaults, the most expensive in its requirements of time, labor and material. The chief disadvantage of the dome as used by the Romans lay in the fact that it had to be set above a circular compartment. No other form of vault lends itself to so satisfactory and splendid a method of lighting the interior of a building —the dome permitting at its summit a circular opening of any size, through which light enters and is evenly distributed.

Architecture has often been defined as beautiful building. This is true if we interpret beautiful to include much that is merely attractive to the eye, and much that is scarcely more than striking, or noticeable. The qualities, aspects and details of a building which keep it from being altogether plain, unpleasing, or unlovely are architectural qualities. Ornamental detail, which causes many buildings to be classed as architecture, may be, and often is, of itself positively ugly. In general, that ornamental detail which results from, or is dominated by, structural necessity is beautiful, or approaches being so, although in any final analysis much of what is loveliest in the best architecture, can no more be explained or accounted for than beauty in the works of nature.* A large share of that ornamental detail which gives unique beauty to Greek architecture is clearly the outcome of post and lintel construction. Again, details that are

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*William Morris defines architecture as "the art of creating a building, with all the appliances fit for carrying on a dignified and happy life." It is difficult to make this definition cover such things as prisons, many of which are undeniably works of architecture, and good architecture. Ruskin on the other hand defines architecture as "the art which so disposes and adorns the edifices raised by man for whatsoever purposes, that the sight of them contributes to his mental health, power and pleasure." This is broader and more definite than what Morris says, yet throws the architectural character wholly upon the decoration of the structure. It is the view of the *Century Dictionary* when it says: "Architecture is properly distinguished from mere building by the presence of the decorative or æsthetic element."

In such connection it is always well to turn to Viollet-le-Duc, He says: "Architecture is the art of building and includes two elements, theory and practise. The former comprehends the fine art side proper, the body of general rules inspired by taste and based on tradition, and the science, which admits of demonstration by means of invariable and absolute formulas. Practise is the application of the theory to particular needs: it is practise which causes the art and the science to conform to the nature of the materials, to climate, to the customs of the period, or the necessities of the occasion."

In a single sentence, characteristic of him for grasp of the facts, taken as a whole, Emerson says: "Architecture and eloquence are mixed arts whose end is sometimes beauty and sometimes use."

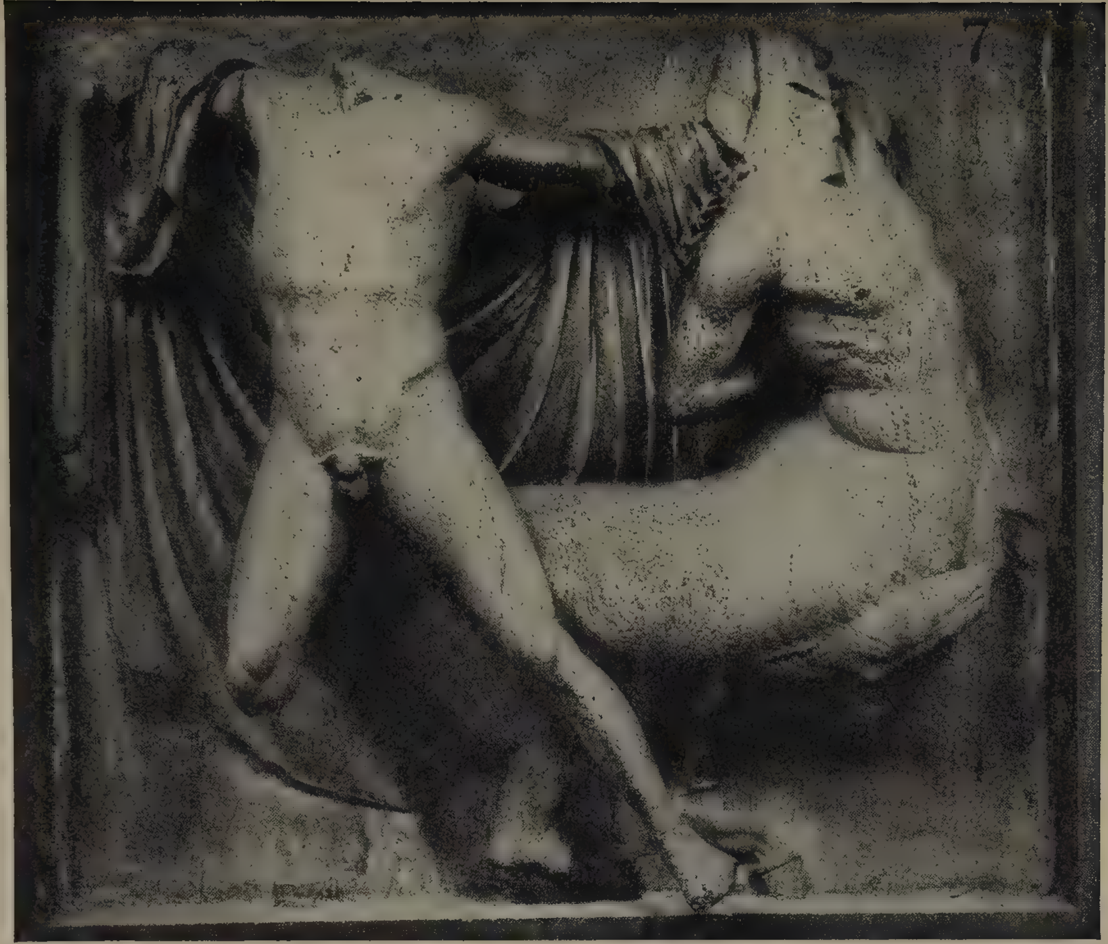

Fig. 9. Metope from the Parthenon

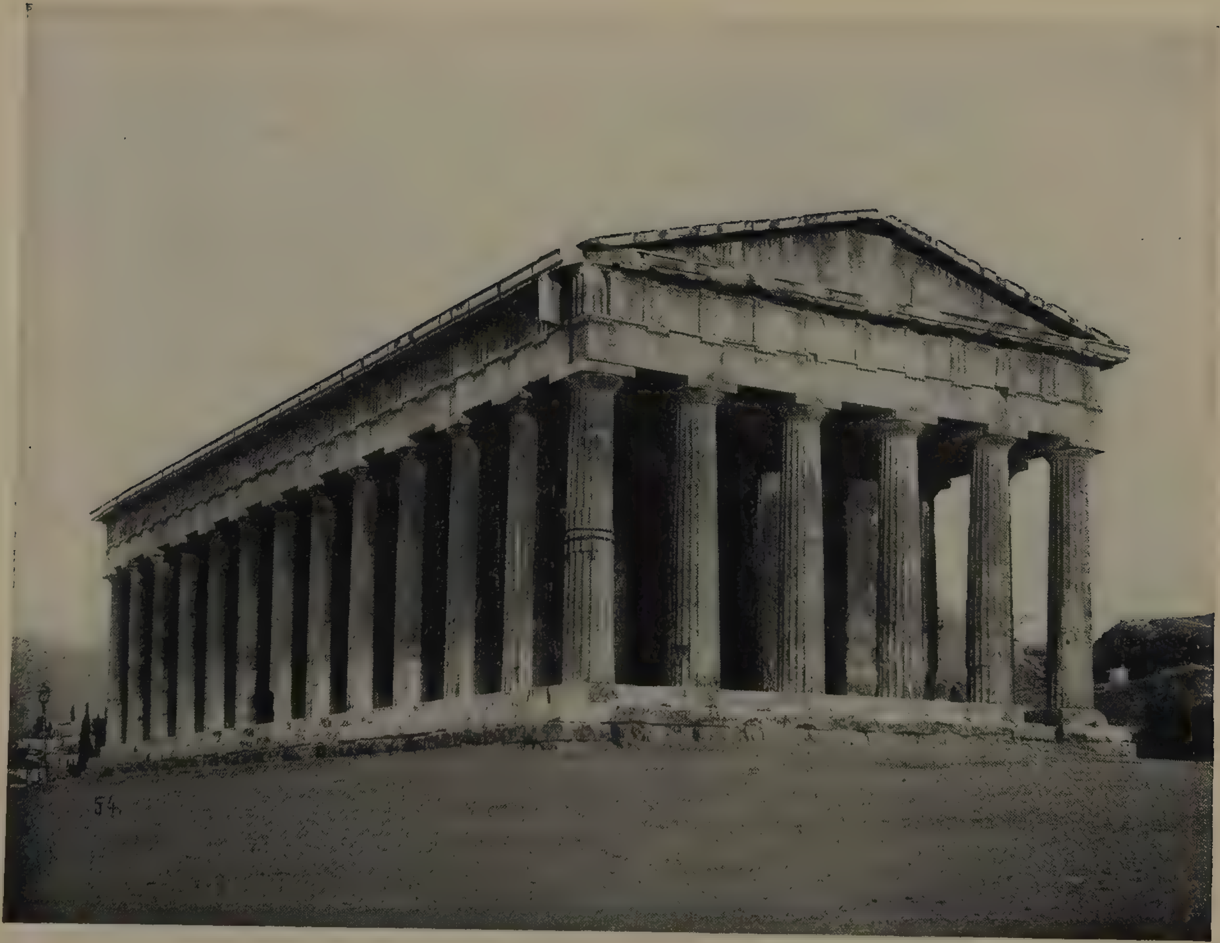

Fig. 10. THE THESEUM

the source of great beauty in Greek architecture can be reasoned about and explained. But finally we come to details, in Greek temples such as the Parthenon, that bestow indescribable and undefinable beauty upon the architecture, as color does upon clouds—beauty that is its own excuse, beauty that is beyond explanation.

The greatest things of art, which means of course the most beautiful or the most sublime, come into existence only when there is a deep and wide-spread uniformity of interest in the production of works of art, together with a parallel uniformity and wide-spread comprehension of the principles of art. Such a condition existed in Athens during the fifth century, B. C. Artists of every sort there were in plenty, and there was an abundant audience of intelligent critics—persons who understood the principles of all the arts. There were giants in those days but they were giants of the imagination, what men call "geniuses." Why? No man has explained further than Carlyle when he called genius—"the inspired gift of God," or Dante, when he said, "It is in-poured of heaven at birth, and can be had through no human willing."

The columns of Greek temples (Fig. 10) were tapered, swollen and inclined, enough to overcome the optical illusion[7] which makes tall posts appear to spread, parallel-sided posts appear to hollow-in, and vertical posts seem to lean—all three faults in appearance, as they would be in reality. The columns of the Parthenon, for instance, offer illustration of a fundamental principle of great art, that things should be made to look right, as well as be right. The flutings, and other carved details of these columns, like the columns themselves—chief source of the beauty of the building—were the direct outgrowth of post and lintel construction. This tapering and swelling and inclining of the columns declares them to be the offspring of a finer imagination and finer senses than are required for merely adequate or safe building. In whatever measure this was so—it is a point on which authorities disagree—it was due to the unusual delicacy of Greek sight, the surpassing clearness of Greek thinking, the marvelous scope of Greek imagination, the creative architects, and the critical audience—the Athenian citizens—by whom, and for whom, the temple was built. In a word, these columns offer an instance of the Greek genius expressing itself architecturally. Emotion and intellect fused to incandescence in the crucible of genius, the Greek mind, produced many such things. In works of art of the highest order there is no place for even the happiest accident; none for the sportive fancy. "Not one effect," says M. Boutmy, speaking of the Parthenon, "which, if not reasoned, is not at least reasonable."

The frieze above the columns of the Parthenon, as in the Theseum (Fig. 10), is composed of alternating blocks: tall blocks fluted like the columns yet differing as much as flutes can;—those of the columns having curved sections, these angular (Fig. 15), on which the lintels of the cornice rest; and square blocks wonderfully sculptured in low relief with figures of men and animals. These bas-reliefs are details of great beauty, but they have no real structural purpose. They merely fill the spaces between the tall narrow supporting blocks already spoken of. We can, however, reason to some extent about them, for if they were not there the whole upper part of the building, the roof and the entablature (horizontal part of a building which rests on columns) would lack that appearance of completion or enclosure which has always been held precious in building design because it is reasonable. Moreover, these unstructural elements (the thin, square, carved slabs) offer legitimate places for ornament, the meaning and beauty of which can in nowise here be confused with the always reasonable demand for the signs of actual strength in places where strength of structural members is imperatively called for. In fine, this is the reasonable place for the expression of meaning and emotion on the front of a great building as intellectually sane in construction as it is powerfully imaginative in conception. Scarcely equaled in the whole history of art is the sculpture of these bas-reliefs of the Parthenon (Fig. 9), and not less remarkable is the design of the whole frieze, of which they are but parts.

Finally we come to details which give indescribable beauty, that complete, and, as it were, crown the temple with dignity and loveliness,—the groups of full round statues that had their places in the gables. These statues—the Theseus (Fig. 7)—are ornamental details, the beauty of which alone is ample reason for their existence. Yet it may be truly argued that they explained the meaning of the temple. So they did, although they have no shadow of structural excuse, while the square bas-reliefs below (Fig. 9) had at least that of closing or completing the frieze, as has been shown. Now looking higher still at this temple as it was in its integrity we should have seen carved corner ornaments and a great ornament on the peak of the gable. It could not be said that they explain anything, and surely not that they were the result of any, even the most remote, structural requirement. They had literally no excuse beyond themselves. They were like jewels worn by a beautiful woman making her an object of greater beauty.

In Greek architecture the ornamental parts were in great measure the direct result of the functional purpose for which the parts existed. It was "ornamental construction," not "constructed ornament." This is the same thing as saying that the best Greek architecture was organic; that it resembled nature in the manner of its procedure, every part fitted to every other part, and all the parts fitted to the whole, though not one of those parts could be traced to any actual model among the works of nature. It is so that Greek art, like all great art, was based on nature and always remained faithful to her. The highest praise that can be given to any work of art is to call it, in this sense, organic; to say that it looks as if it had grown as the things of nature grow, and is at the same time expressive of human reason and human imagination.

The end of art is to create what civilized man requires for his use and his delight, what nature has not provided. The true manner of art is to proceed as nature proceeds, from cause to effect. It was precisely this that the Greeks did at their best, which was in the middle of the fifth century B. C., when they built the Parthenon. Whether it is the conception of the whole edifice, or the least detail; whether it is the columns considered as posts for the support of beams, or sources of ornament; whether the alternating frieze, as a problem in sound and reasonable construction, or a decorative band, a lovely chaplet about the head of a splendid structure;—however looked at, in its parts, or as a whole, the Parthenon is a symbol of order and reason. It is the present embodiment of imagination. It is a witness of utmost beauty as conceived and materialized by man. It warranted the Roman opinion of the Greeks, and confirms subsequent cultivated judgment to this day, expressed in the famous line of Lucretius, *"Primum Graius homo,"* "The Greek before all others."

The Arch of Titus (Fig. 6) at Rome (*circa* A. D. 82) offers an example of the barrel vault used architecturally. Rectangular piers of large dimensions carry the weight, and counterbalance the thrust of the vault to the left and right. They are the abutments. That these are carried high above the impost of the arch or vault tends greatly to increase the stability of the structure. It also made possible any relation of height, to width and thickness of pier, which the designer thought would combine to make a well-proportioned whole. The proportions of the Arch of Titus have always been regarded as excellent. The piers might have been lower and broader, or higher and narrower, with the result of stunted proportions in one case, or top-heavy in the other.

This carrying the support and abutment of an arch above the impost was of Roman origin; a contrivance of far-reaching effect, both for safety and beauty, even to the end of the Middle Ages.

The haunches and crown of the vault, in the Arch

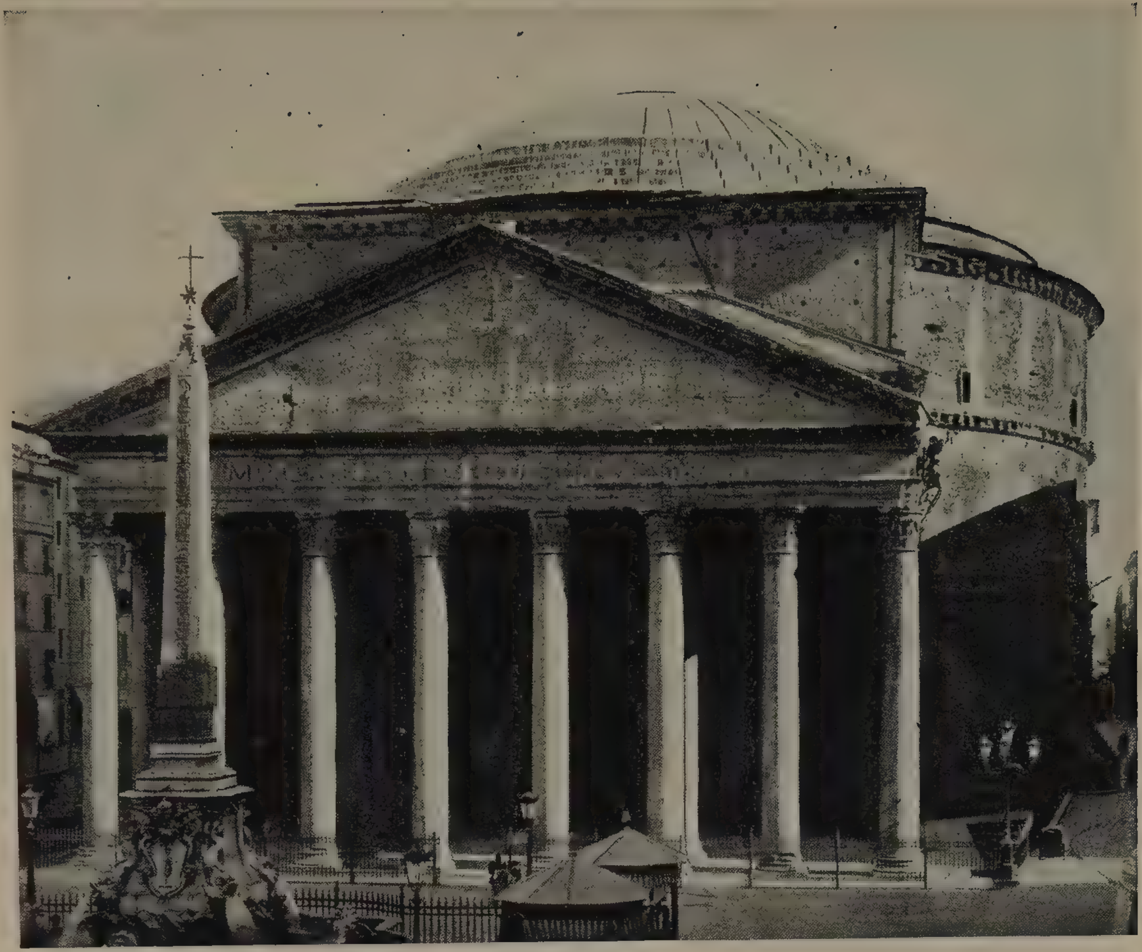

Fig. 11. The Pantheon

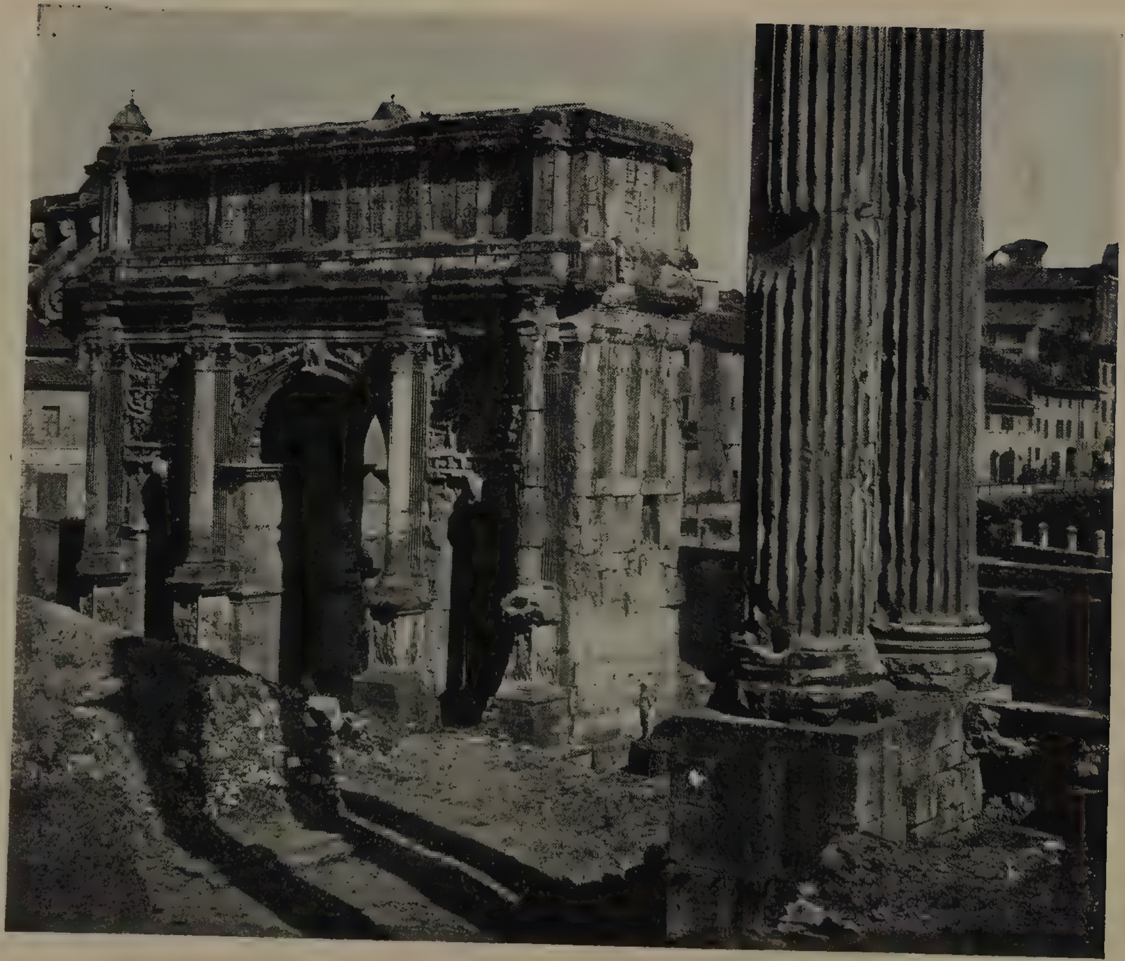

FIG. 12.

THE ARCH OF SEPTIMUS SEVERUS

of Titus, are loaded with a rectangular mass of masonry, called an "attic." This feature, of purely Roman origin, was the natural outcome of carrying the piers above the impost of the vault. The attic was peculiarly suited to the purpose of the triumphal arch because it furnished, in a most conspicuous place, a large plain surface for the commemorative inscription. The flat top of the attic was intended for a group of sculpture, which would of course add greatly to the beauty and impressiveness of the monument.

The piers of this arch are decorated with engaged columns, i. e., to the angles of the piers columns were attached, and on these columns an entablature rested. In later triumphal arches, such as Septimus Severus (Fig. 12), the columns were free standing; i. e., there was a space between the columns and the piers of which they were the decorations. Thus, the columns of the Arch of Titus (Fig. 6), being actual parts of the piers, are more than purely decorative features, though little more. It is clear at a glance that these columns, and their entablature, are not the outcome, direct or indirect, of the constructive principle of this monument. Quite otherwise, for they are in direct contradiction to that principle, i. e., to the arch. They are an example of "constructed ornament"; though not so extreme an example as that referred to in the Arch of Septimus Severus (Fig. 12), the free-standing columns of which form a mere screen of decoration set up in front of the piers, attached to the actual fabric of the structure at the level of bases and entablatures only.

The inherent nature of arches and vaults, expressed in lateral thrusts, calls for massive support and abutment, and that is what the piers of the Arch of Titus provide. The inherent nature of a lintel calls for nothing more than relatively slender supports—columns. As lintels imply columns, so arches imply piers.

But in the Arch of Titus, arches and piers are combined with lintels and columns. This was characteristic of Imperial Roman architecture. In order to decorate the piers, which of themselves would have been over-plain, the designer set columns upon the angles, and upon the columns a complete entablature. Together these enframe the outline of the arch construction. The architect took the decorative, structural features of one method of building, and applied them superficially to the structural features of the diametrically opposite method.

The columns and entablature of the Greek temple (Fig. 10), from which the temple derives its chief beauty, could not be withdrawn without destroying the temple, the actual structure. Here the beauty of the thing is an integral part of the thing itself.

The columns and entablatures of the Arch of Titus, the beauty of the monument, could be taken away and the arch remain perfectly secure. It is obvious then that the beauty of this thing is *not* an integral part of the thing itself.

The barrel vault of the Arch of Titus was sunk with deep coffers; square box-like depressions cut into the surface of the arch, and seen, on looking up, as an enrichment of the soffit of the arch. The under side of an arch or a lintel is called "soffit." This typical method of decorating Roman vaults lent itself to the greatest elaboration in the form of carved moldings around the sides of the coffers (Fig. 8), and carved rosettes in the tops of them.

The triumphal arch was a conception of the Imperial Roman age, and no monuments more adequately represent that age, or the taste and constructive understanding of that time. From works of simple dignity and great power like the Arch of Titus, these things finally became objects of shapelessness, unmeaning ornament, and vulgar display. That they were all a mixture of "splendor and bad taste"—Fergusson's too often accepted characterization of all Roman architecture—is not true.

When they chose to do so, the architects of the Empire used columns with as much constructive reason as the Greeks and on a much larger scale, but never with that exquisite refinement which has immortalized the builders of fifth century Athens, and which makes the Greek temple, and before all Greek temples the Parthenon, unique to this day among the works of men. The portico, or temple front, of the Roman Pantheon (Fig. 11), with its columns nearly sixty feet high, each cut from a single block of stone, is one of the wonders of the architectural world. It is one hundred feet wide and fifty feet deep (Fig. 13), and contains sixteen columns. But this portico forms the entrance to a far more remarkable creation, the largest circular, vaulted interior ever built, and in some respects the most wonderful of all buildings.

The Pantheon was built for the Emperor Hadrian, the greatest builder of all the Romans (c. 117 A. D.). The rotunda (circular hall), measuring one hundred and forty-two feet across, is vaulted with a hemispherical dome the crown of which is one hundred and forty-two feet above the pavement. This dome is largely concrete, though some brick and stone were used in its construction. The wall which supports and abuts the dome is twenty feet thick. It rises many feet above the impost line (Fig. 8)—another instance of what has already been explained in connection with the constructive method of arch building as employed in the Arch of Titus, and common to so much of the architecture of the Empire. The haunch of the dome

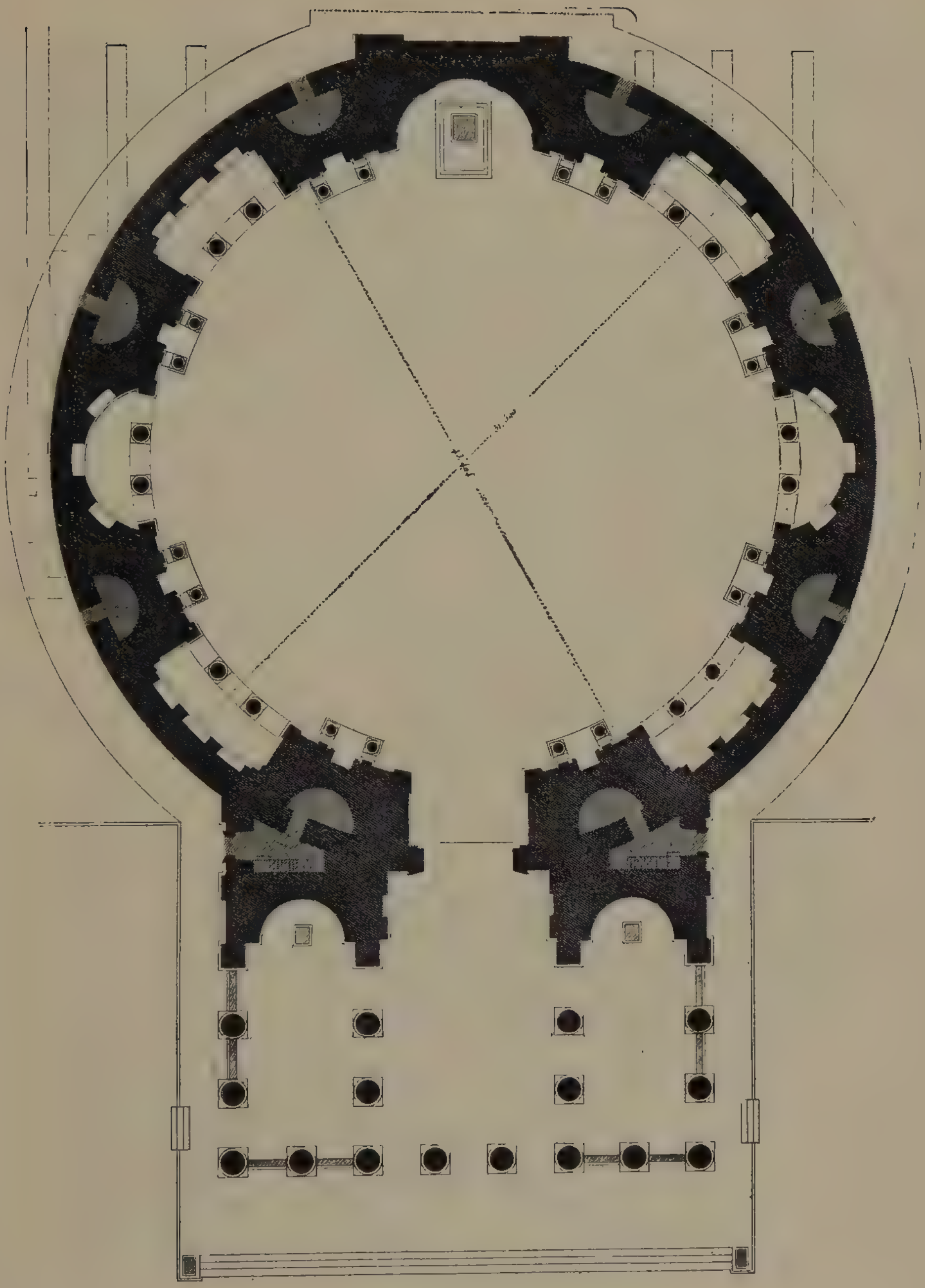

FIG. 13. PLAN OF THE PANTHEON

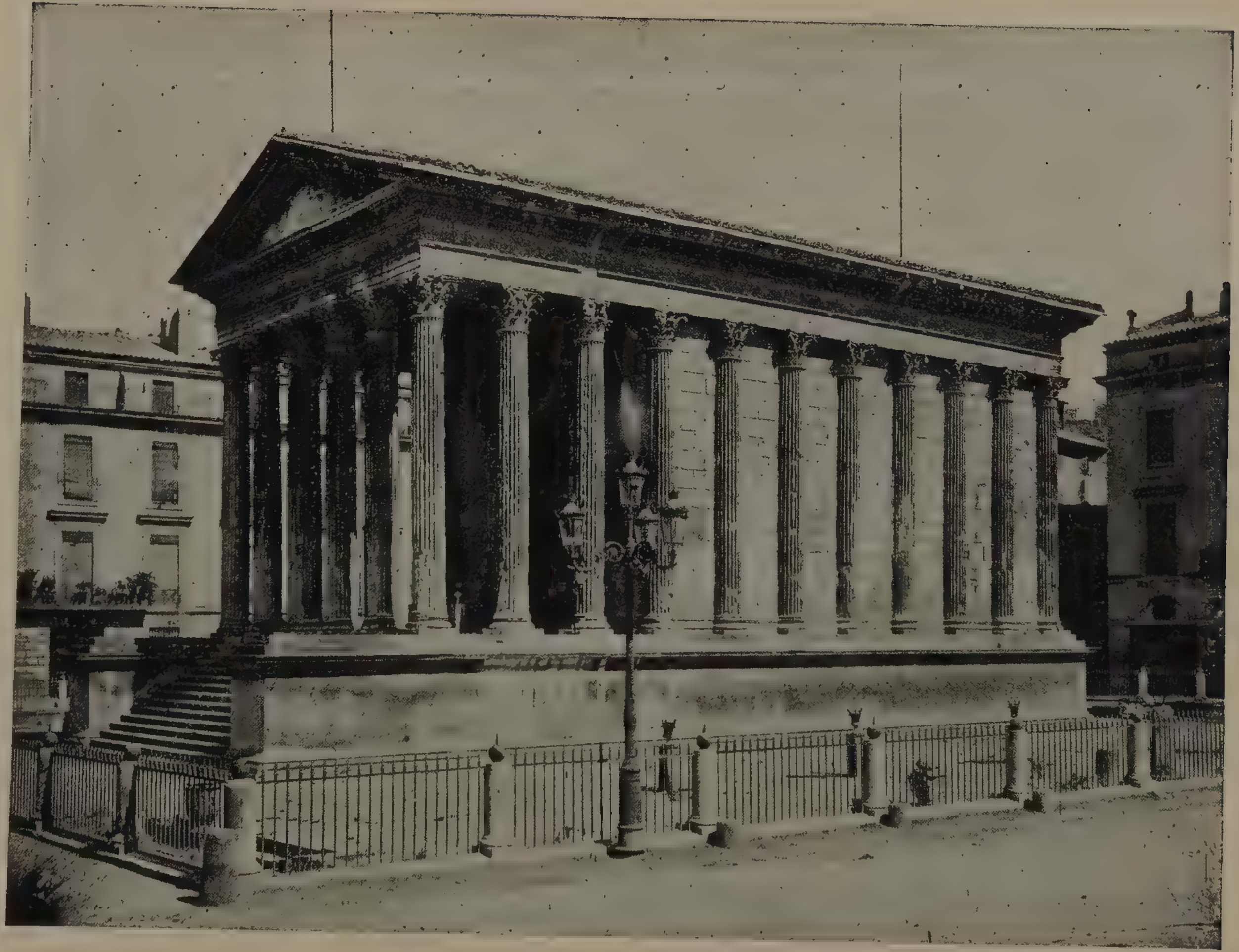

Fig. 14.

Maison Carrée at Nîmes

is loaded with circular steps, or terraces of masonry, a source of additional strength.

As a conspicuous external feature the dome of the Pantheon is a failure. In fact it hardly looks like a dome at all, only the very top of it showing above the terraces and the great surrounding circle of wall. The front view (Fig. 11) is confused by a huge and very clumsy attic built up behind the gable of the portico, against the wall of the rotunda. The union of the circular hall with the rectangular portico is unsatisfactory in plan, and more unsatisfactory in elevation, clearly declaring that the portico was a later addition, built, as is now known, from the materials of a demolished temple of the preceding age of Agrippa.

The internal design and effect of the Pantheon (Fig. 8) is in many respects perfect. The vast space is lighted by a single circular opening, twenty-eight feet across, placed at the crown of the dome. Through this the day enters, and light is distributed evenly to every part; no dark corners, no glare, and nowhere a window staring one in the face and dazzling the sight. There is a consensus of opinion that the Pantheon has "by far the noblest conception for lighting a building to be found in Europe."

The decoration of the interior, while it has undergone various changes, and a complete restoration as late as 1747, is to all intents what it was originally, allowing for much stucco where once was marble, and for the loss of the bronze and gilded linings and rosettes with which the coffers of the dome were enriched.

The wall, as high as the springing of the dome, is divided into a lower story and a second or attic story. The lower story opens (Fig. 13) into three semicircular and four oblong niches, built in the thickness of the wall. These niches are vaulted in the usual Roman fashion, and each has a pair of Corinthian columns set equidistant from the angles of the openings. It should be carefully noticed that while these columns are each at the same distance from the angle pilasters, there is considerably more space between the columns than between either column and the adjacent wall of the niche. This slight variety in the arrangement of the encircling columns—a variety not marked enough to give the appearance of irregularity—does away with the possible sense of monotony, and does much to help make the interior of the Pantheon a truly fine piece of design. The angles, as has just been said, are finished with pilasters, i. e., shallow, rectangular projections, treated like columns, with bases and capitals of their own, and sometimes fluted shafts. These encircling columns and pilasters, many of which belong to the original construction of Hadrian's time, are composed of the richest materials and support a fine cornice which forms the base of the attic story. This story, which has been much changed from its original design, is crowned by a second cornice, from which the great bands of the dome spring upward. These are crossed by similar horizontal bands. Together they form the coffers. The lower story is forty-two and one-half feet high, and the attic is twenty-eight and one-half. Five horizontal rows of coffers cover the surface of the dome up to the level at which it is eighty feet in diameter. From this level up to the eye of the dome it is uncoffered. The grandeur of sweeping line and up-curving surface, culminating in a circle of pure light, the tremendous daring and sanity of this colossal achievement, can not be regarded as among any but the very greatest works of art—expressions of a certain sublime quality in the genius of Rome never known before or since.

Roman temples, with the exception of vaulted circular temples such as the Pantheon, and Roman theaters were to a large extent inspired by Greek models. The best preserved example of a Roman temple, the Maison Carrée at Nîmes (Fig. 14), built by Antoninus Pius 138-161 A. D., does not differ essentially from a Greek temple of the fifth century B. C. The fact that it stands upon a high basement and is approached by a long flight of steps at one end, or that its surrounding

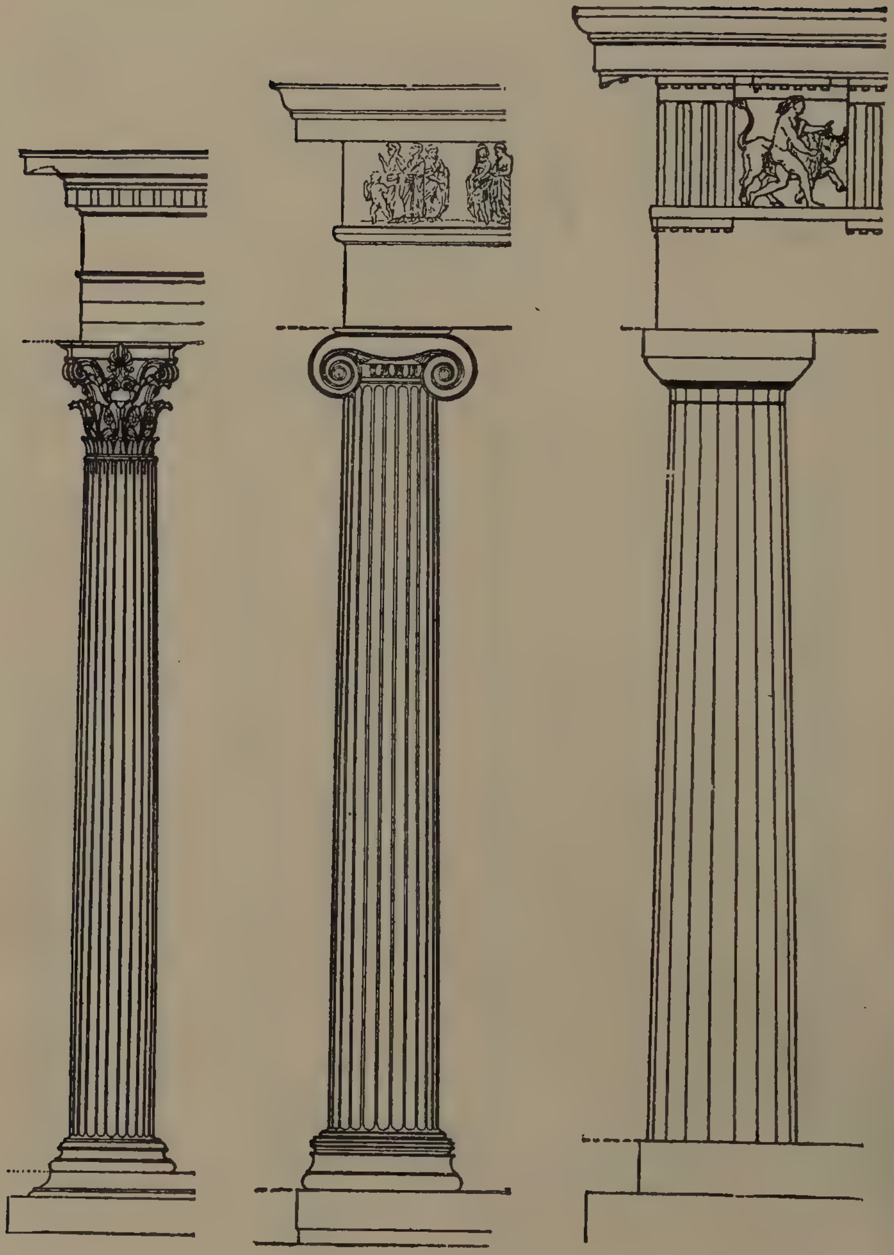

Fig. 15. The Greek Orders

Corinthian Ionic Doric

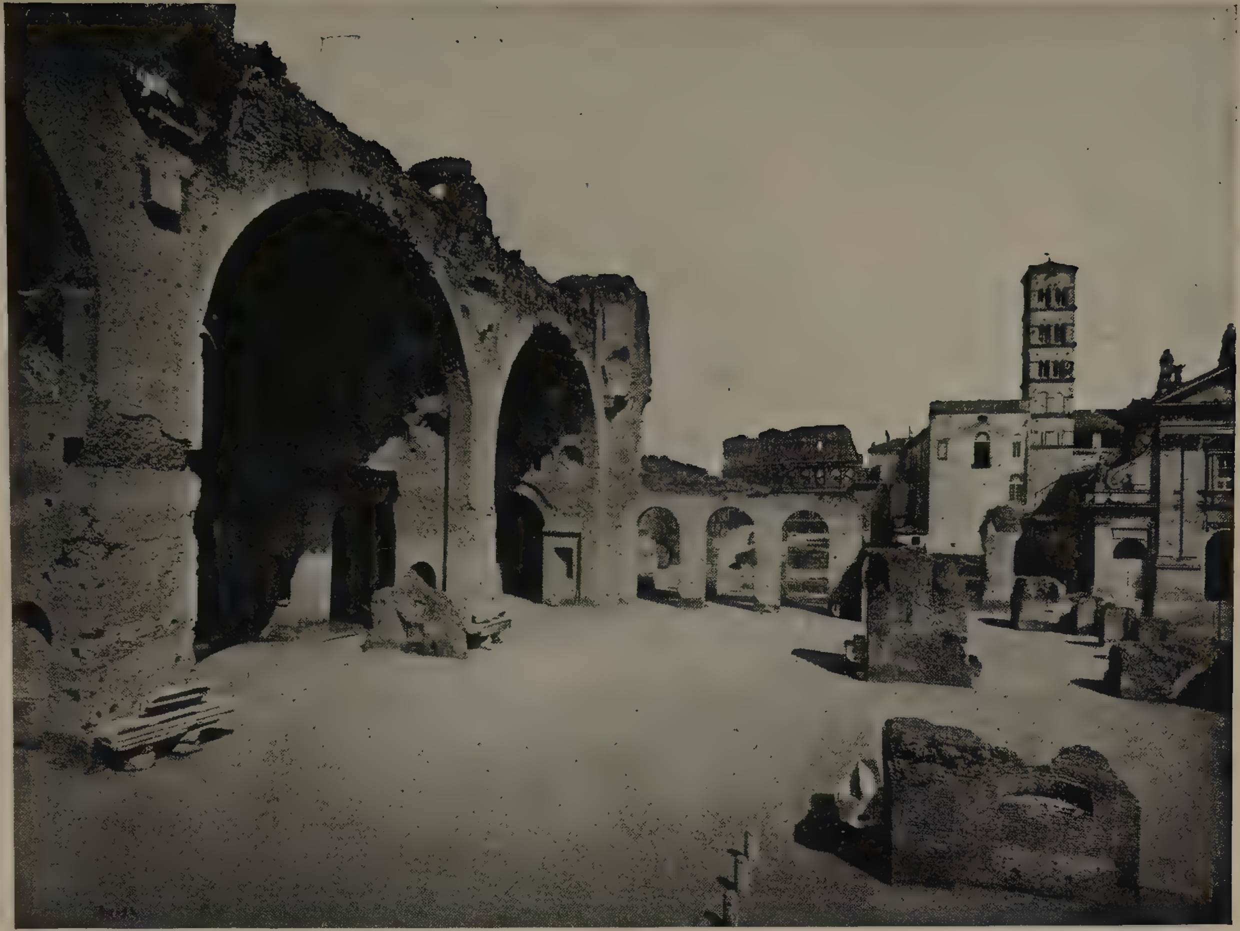

Fig. 16. Ruins of Basilica of Constantine Showing Barrel Vaults of Side Aisle

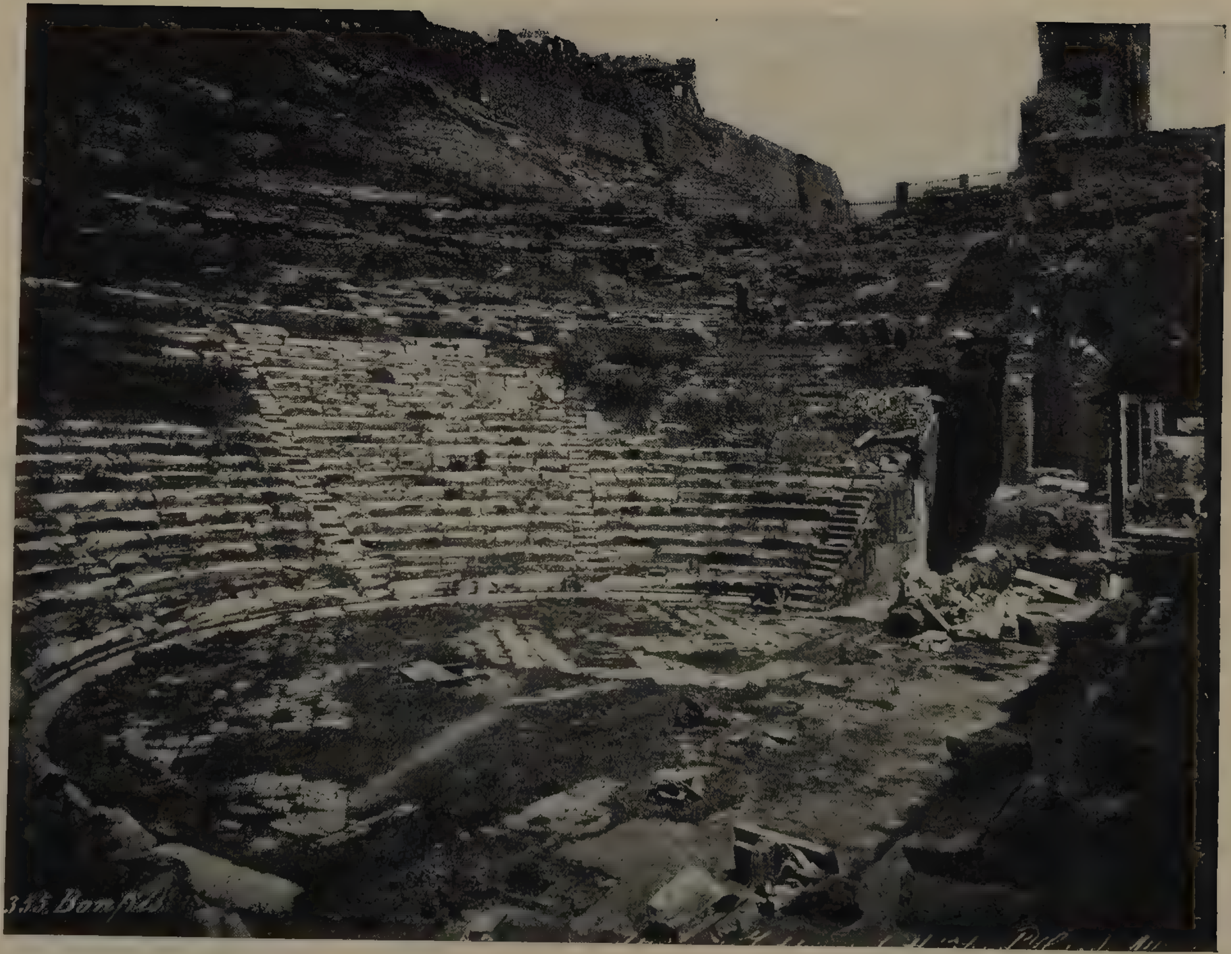

Fig. 17. Theater of Herodes Atticus

columns are, except in front, attached or engaged to the temple wall does not constitute an essential difference sufficient to cast the shadow of doubt upon the theory that the Greek temple (Fig. 10) furnished the model and inspiration for the Roman.

The same is true of Roman theaters (Fig. 17), concentric, semicircular terraces cut into the sides of hills, later built up, and facing a stage, at the back of which a permanent scene was erected. These things had a Greek origin that is clearly discernible.

"The orders" had their origin in Greece, and the fact that the Romans used five distinct forms of columns and entablatures—"five orders" (Fig. 18)—while the Greeks of the fifth century B. C. knew but three (Fig. 15) and used only two, does not establish an essential difference between Greek and Roman architecture.

It should not be forgotten that Sicily and South Italy, Magna Græcia, were very early colonized by Greeks, and that much of the best preserved, as well as finest Greek architecture dating from the opening of the fifth century B. C., was produced on the soil of Magna Græcia, and is to be seen there to-day. This architecture early influenced the Romans. Another early influence that bore upon Roman art came from the Etruscans—those people who lived in Italy before the Romans, and from whom modern Tuscany derives

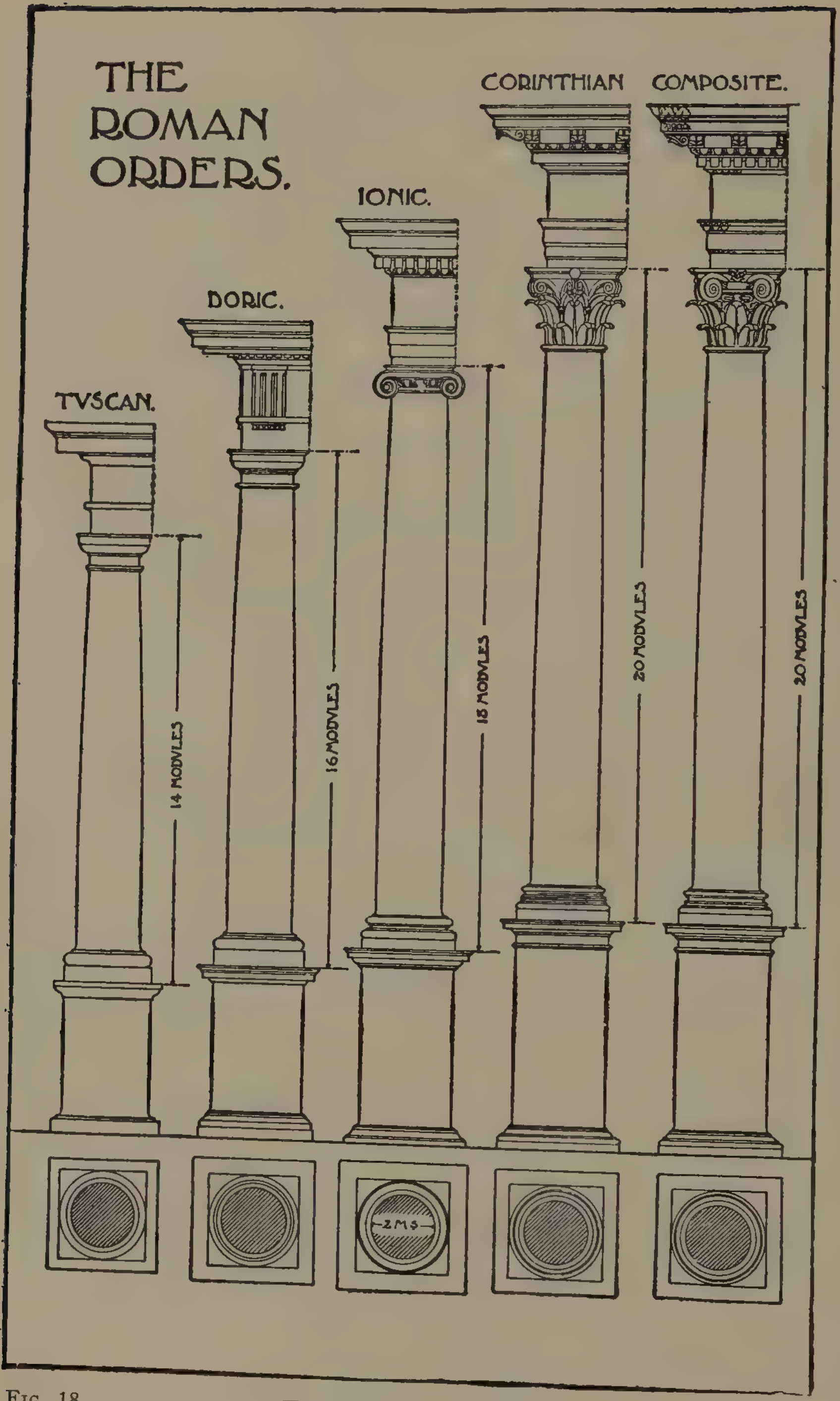

Fig. 18. The Roman Orders

its name. From the Etruscan source came the high basement of the Roman temple, the basement already referred to in the Maison Carrée (Fig. 14). a characteristic feature of Roman architecture—witness the Arch of Titus. Further, the fact that Greek colonies were founded in the neighborhood of Nîmes may in some measure account for the good proportions and the unusual refinement of the details of the Maison Carrée, a refinement more in accord with the work of Periclean Athens than Imperial Rome.[8]

A common error has long prevailed to the effect that what is usually thought of as Roman art was nothing more than late Greek art (Greek art of the fourth and third centuries B. C.) copied by the Romans, or paid for by them—the actual work of Greek architects and artists emigrated from Greece, the Greek cities of Asia Minor, or Alexandria. There can be no doubt that Greek models always had a marked effect upon Roman art, both early and late, but it is a great mistake to suppose that Roman art was a mere copy of Greek, or conceived and executed wholly by Greeks, or Greek-taught Romans.

If the orders, temples and theaters of Rome, are referable to Greek models, such tremendous works of architecture as the Pantheon, and all similar domed structures, and the triumphal arches, together with the enormous halls covered with elliptical groin vaults, of which the Basilica of Constantine (Fig. 16) is an example, and the amphitheaters, the most splendid of which is the Colosseum (Fig. 20)—all these works are of Roman conception wholly, and constitute an art as purely Roman as it is vastly important.[9]

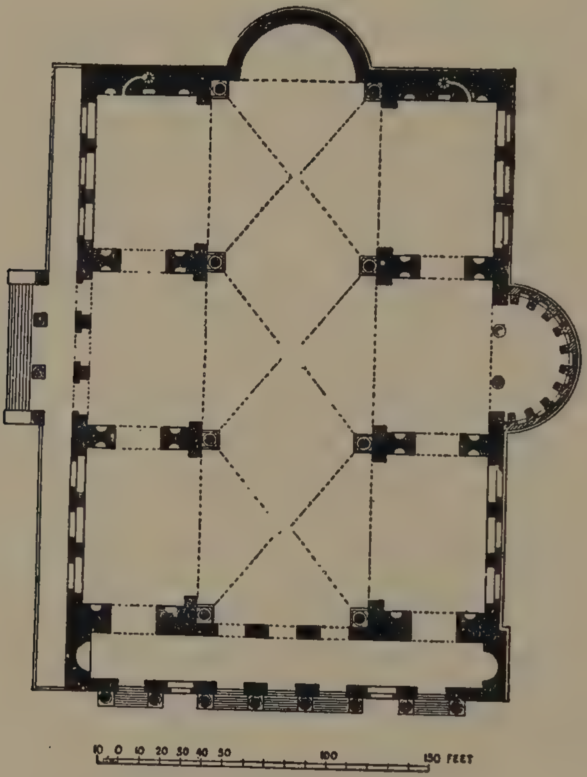

Fig. 19. Basilica of Constantine, Plan

The Basilica of Constantine, while an exceptional building, offers a superb example of the typical Roman method of using barrel and elliptical groin vaults in conjunction. Dating from 312 A. D. it is the last great, completely vaulted structure of the Empire.

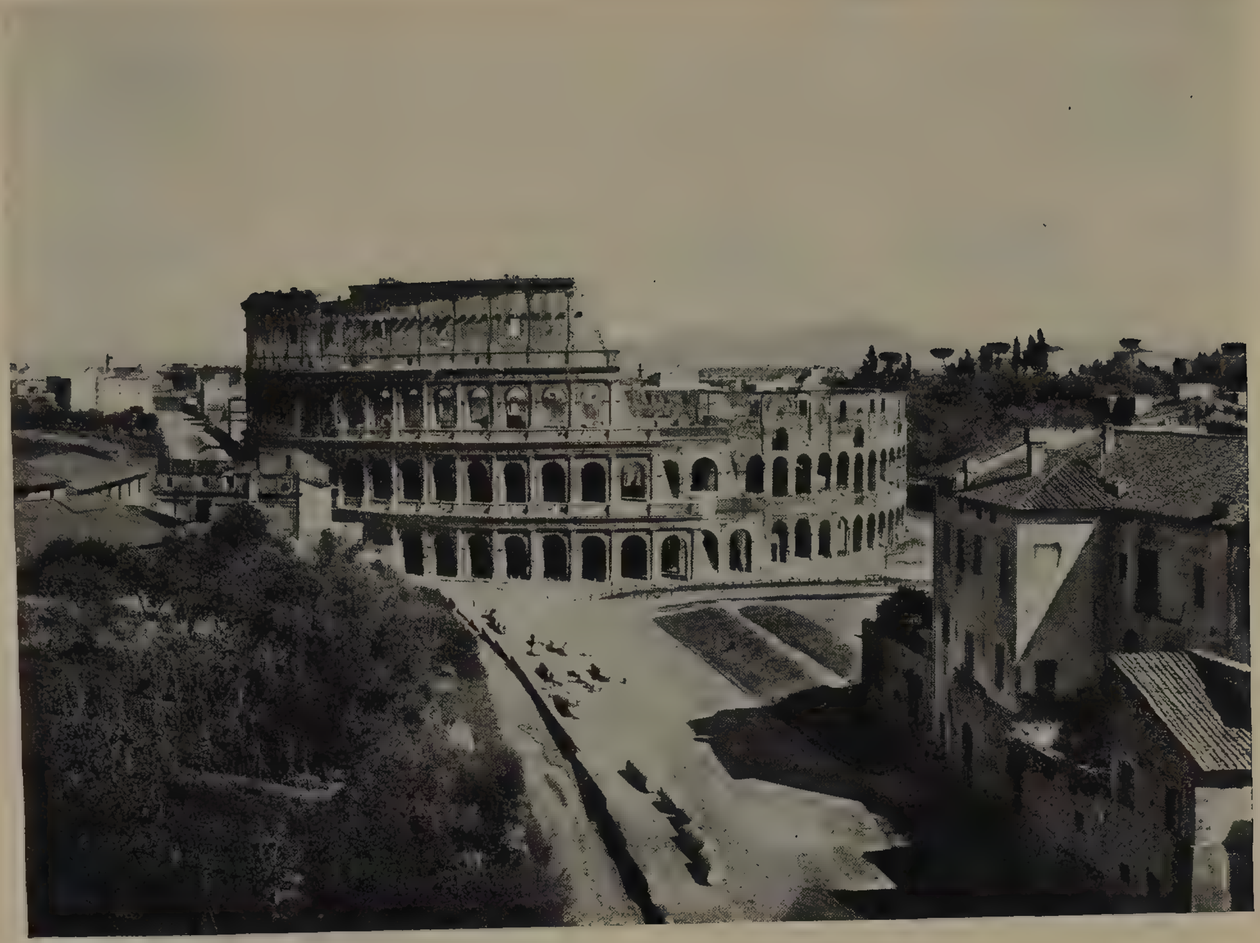

FIG. 20. THE COLOSSEUM

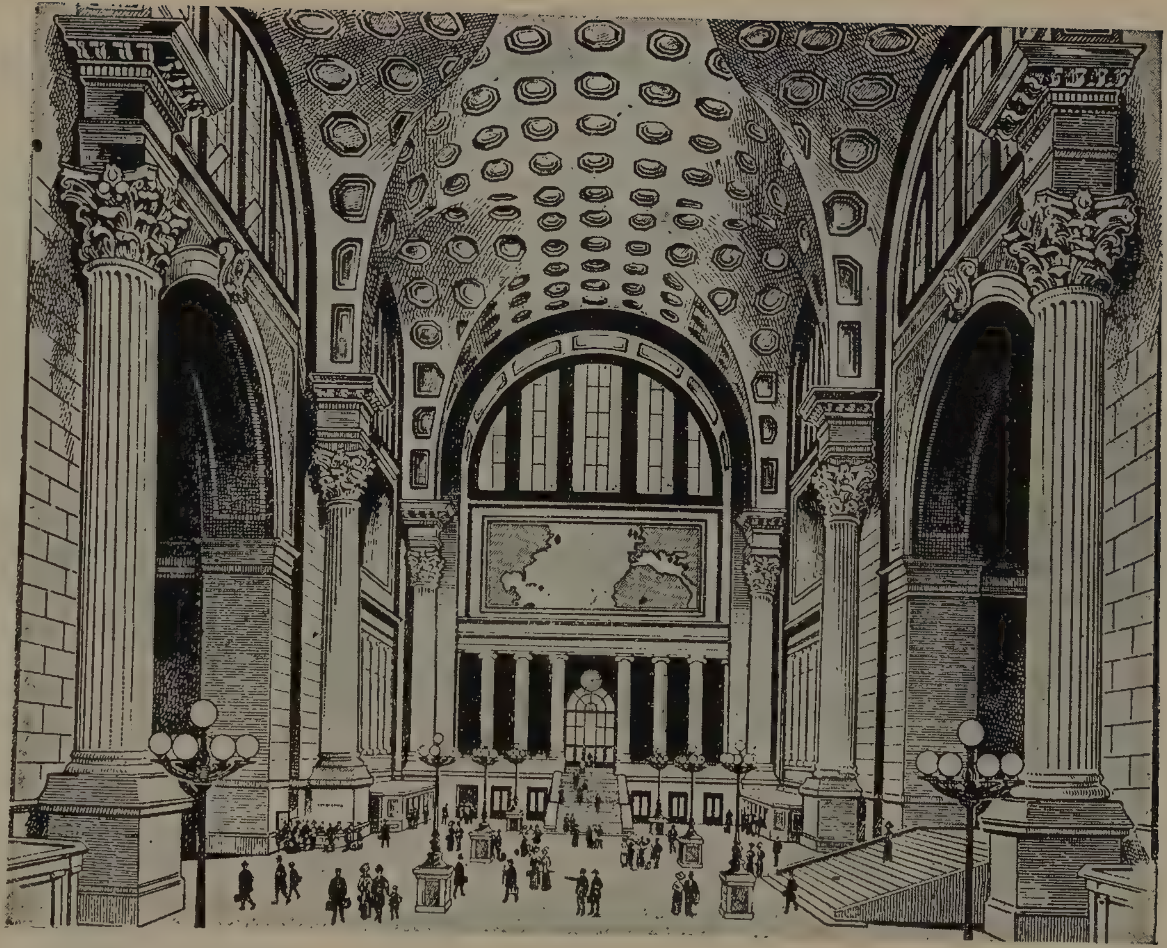

Fig. 21. Pennsylvania Railway Station, New York

The plan (Fig. 19) was a rectangle measuring one hundred and ninety-five feet by two hundred and sixty. The central aisle, called nave, was flanked by narrower aisles on either side.

The nave consisted of three square compartments, eighty-three feet on a side. These compartments were vaulted, each by an elliptical groin vault (Fig. 5). The height of these vaults from pavement to crown was one hundred and twenty feet.

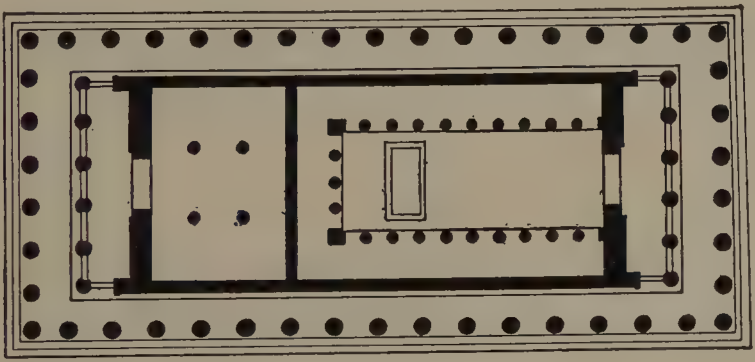

FIG. 22. THE PARTHENON. PLAN

The side aisles each consisted of three oblong compartments. These compartments, six in all, were vaulted with barrel vaults (Fig. 22). The height of the side aisle vaults was about two-thirds that of the nave.

At a glance one sees that there is a striking resemblance between the plan or shape of this building and a Greek temple (Fig. 9). There is, however, one essential difference, and this was due to the essentially different roofs with which the two buildings were covered—the Greek temple with a lintel roof, the Basilica of Constantine with vaults. The essential difference between the plans of these buildings lies in the fact that the nave of the Basilica of Constantine was separated from the side aisles by a few large piers. These piers were the supports, and abutments, for a series of colossal vaults, tremendous in weight, and tremendous in thrust, while the numerous interior columns of a Greek temple had only to carry the weight of a beam or lintel superstructure. Such supports required comparatively little material, and called for no exceptional skill in construction or engineering. The vaults of Constantine on the other hand demanded an enormous amount of material in piers and abutments, as well as a carefully thought out adjustment of part to part—witness to very remarkable engineering and constructive ability.

The arrangement of the vaulting of the central compartment of the nave, with that of the adjacent compartment of one of the side aisles, if understood, will make plain the vaulting of the entire building, and that of many similar structures erected under the Empire. It will further make plain the essential conception of vaulting—an Imperial Roman conception—the ultimate development of which in the later Middle Ages is to be seen in the vaulting arrangements of every great Gothic church in Europe and England. This conception was making the lower vaults of the side aisles (Fig. 5), together with the piers on which they rested and by which they were abutted, act as a supporting and a buttressing system for the higher and broader vaults of the nave.

It will be seen that the thrusts of the vaults of the nave (vaulted with elliptical groin vaults) were gathered along the groins, and were brought down on the four piers at the four corners of each individual vaulting compartment. The weight of the vault was carried by these piers, and the thrusts were counterbalanced by their inert massiveness.

The shape and ground plan of these piers is of great importance. They were really thick walls set end-on, or at right angles to the long axis of the building, thus offering the maximum of inert resistance to the thrust of the elliptical groin vaults of the nave. In this position these same walls provided support and abutment for the barrel vaults with which the side-aisle compartments were covered (Fig. 16). The barrel vaults of two adjacent compartments of this aisle, mutually thrusting upon each other, tended to produce an equilibrium, while their united weight upon the wall itself greatly increased the power of the wall (strength due to massiveness) to counterbalance the thrust of the elliptical groin vault of the nave.

What we have here—structurally speaking—is a partial equalizing of opposing forces, the thrusts of adjacent vaults, together with a highly effective utilization of the supports and abutments, all carried out on a vast scale, with such massiveness of construction—brute force of building it might be called—as would have been prohibitive, and must ever be, except with social conditions such as existed under Egyptian Pharaohs or Roman Emperors.

The fact that the narrow vertical surfaces, four upon each side of the nave (Fig. 5)—the ends of the walls which have been described as forming the supports of the barrel vaults of the aisles, and the abutments for overcoming the combined thrusts of the elliptical vaults of the nave—the fact that each of these four vertical surfaces, on either side of the nave, was occupied by a colossal Corinthian order, a column crowned with a square section of entablature, requires comment.

In the first place the relative position of these columns is the same as that of the columns which divided the broad aisle from the side aisles in a Greek temple. But here the columns were few and of vast dimensions—sixty feet high and eighty feet apart. In the Greek temple the columns were many; in the Parthenon, for example, ten on either side of the nave, and scarce ten feet apart. Again, it is the all-important difference between the Greek and the Roman span element—the Greek and Roman principles of construction—the lintel, and the arch, that is the cause of essential divergence between two such buildings, a Greek temple and a vaulted Roman basilica.

With the Greek building, inside as well as out, the columns were the actual working members of the construction, the things that held up the roof, to withdraw which meant total destruction of the entire fabric.

The four colossal columns that flanked the nave of Constantine's Basilica on either side, were of comparatively little use so far as construction and safety went. Although the groins of the high vaults did not actually come down on these columns, the columns had the appearance of supports, which, in some measure they undeniably were. The actual supports, and the actual abutments of those colossal vaults were, as has been explained, the massive sections of wall, set end-on, across the side aisles, in the direction best suited for abutting the combined thrusts of the nave vaults.

The true purpose of the builders in erecting those huge columns with their blocks of entablature was decorative—to diversify the interior, and to relieve surfaces that would otherwise have been blank and uninteresting. In a word, they wished to give elegance to the interior, the type and symbol of which, to the mind of Roman architects, as it is to many architects of the present day, was an "order," and particularly the Corinthian order. It is also true that the span of the nave vaults was materially lessened by this row of columns, a highly practical consideration on the side of construction, while the actual width of the nave itself was not diminished.

However, the columns of the Basilica of Constantine were mainly decorative. As the Greeks used columns, or orders, they served the double purpose of construction and decoration. Columns employed as those in the Basilica of Constantine could be removed with no serious results. To have removed the similarly placed columns of a Greek temple would have caused the roof to fall.

One further feature of importance must be mentioned, one that was incorporated, along with many others, in the mediæval church—the apse (Fig. 19), a semicircular termination of nave or aisle. It was vaulted with a half hemispherical dome, constructed, supported and abutted in the usual Roman way.

The grandeur and simplicity of this famous structure must have been truly remarkable. That the actual dimensions of its various parts were so vast as to destroy the beholders' sense of the true magnitude of the whole, has often been asserted. But assertion, even upon authority, is not proof. On the other hand there can be no doubt that the proportions, i. e., the relation of the parts to one another and to the whole—of height and width, closure and opening—must have been such as to produce a sense of profound and beautiful harmony, which is as precious an attribute of architecture as apparent magnitude. To know what the Basilica of Constantine was really like we need only to have seen the magnificent main hall of the Pennsylvania Railway Station (Fig. 21) in New York—its latest, most splendid and most legitimate descendant. In that hall the Roman Empire lives again and in it Constantine would feel perfectly at home.

The Flavian amphitheater, or Colosseum (Fig. 20), so named because of its colossal size, was begun in 72 A. D. by the Emperor Vespasian, carried forward by Titus, and dedicated by Domitian in 82 A. D. It was not wholly finished until the middle of the third century.

It is of elliptical plan (Fig. 23), six hundred and twenty feet on the long axis by five hundred and thirteen on the short. The outer wall is just under one hundred and sixty feet high.

The system of construction, when once grasped, is comparatively simple, as studying a cross-section (Fig. 23) of the building shows. Tiers of corridors occupy the space between the low surrounding walls

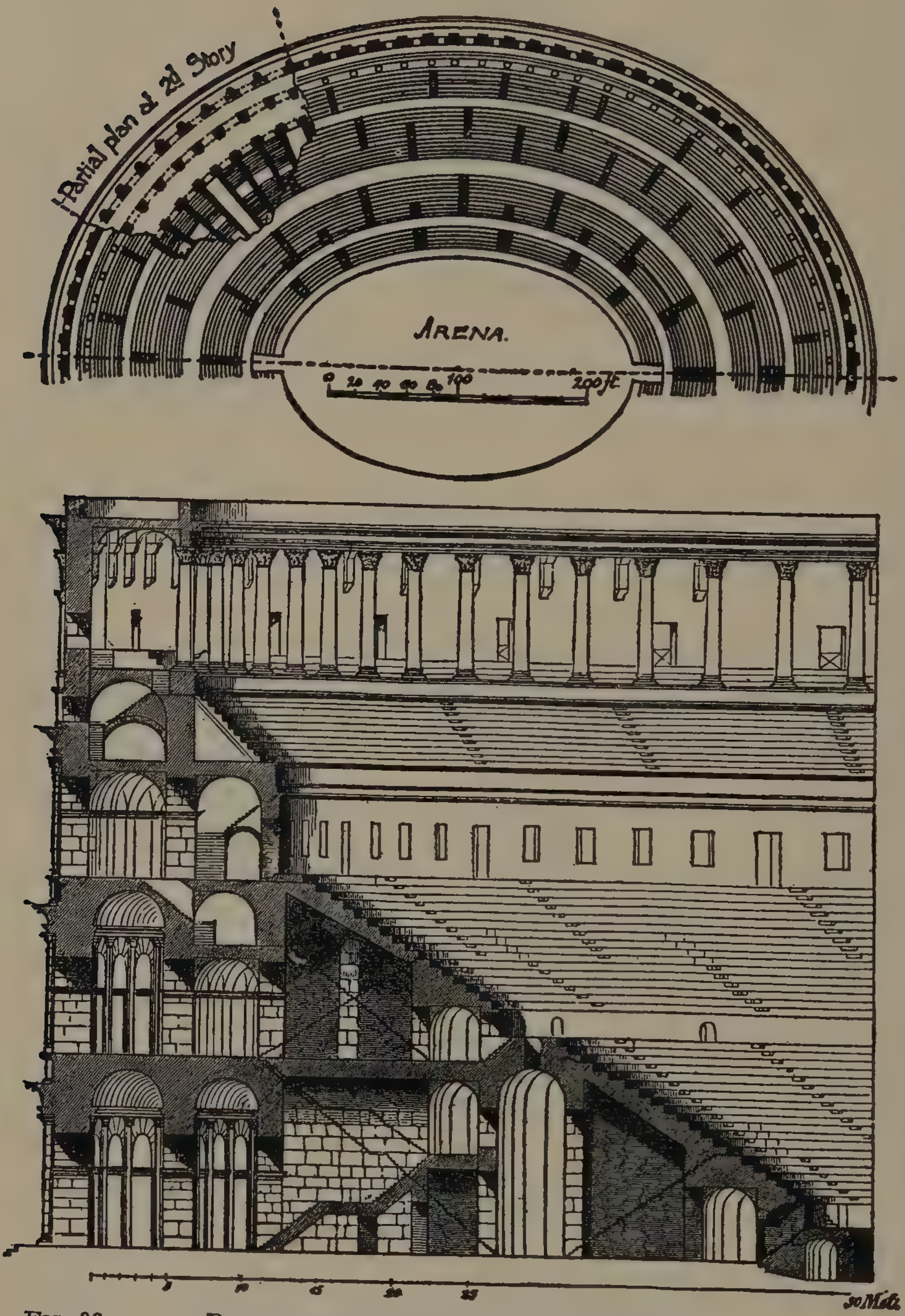

FIG. 23. PLAN AND SECTION OF THE COLOSSEUM

of the arena (the flat central space or stage, the ring of a modern circus) and the high outside walls of the building. In the lowest tiers there are several of these corridors; in the upper tier there is only one, the number diminishing toward the top and the encircling outside wall. These corridors follow the elliptical plan of the building, and are separated from one another by walls of great thickness. These walls serve for the support and abutment of the barrel vaults with which the corridors are covered. The massive outer wall acts as an abutment for the thrusts of all the barrel vaults toward the outside. An immense load is put upon the vaults by the terraces of concrete and stone, the seating arrangements with which they were covered. The seats rose (Fig. 24) in ever increasing ellipses from the arena wall to the topmost row against the outer wall.

Another set of barrel-vaulted corridors following the radii of the ellipse from inside to outside on the level of each story of the building cut through the elliptical corridors. The outer ends of these corridors are the round arch openings which show in such great numbers on the exterior of the Colosseum. On the ground level they formed entrances and exits. There are eighty of them. Inside stairways led from story to story, while flights of steps led down from the various corridors, among the seats, as in a modern theater.

The arena, which covered an acre of ground, was furnished with a system of aqueducts and drains so that it could be flooded or emptied at will. This was for the sake of the sham sea-fights, of which the Romans were fond. Beneath the ground level there was stabling room for wild beasts, bathing and dressing rooms, apartments for gladiators and prisons for captives—a labyrinth of vaulted cellars and passageways.

The exterior (Fig. 20) is divided into four stories and decorated, like the Arch of Titus, with engaged orders, the entablatures of which form continuous bands, or "string courses," around the building. Thus each of the many arched openings is framed by the right lines of post and lintel construction—forms as contradictory to each other as the principles of construction, the span elements which they represent, beam and arch.

Pilasters take the place of engaged columns in the top story. These pilasters, and the engaged columns of the two middle stories of the building, stand upon basements like that on which the engaged columns of the Arch of Titus stand. Furthermore, every column and pilaster has a pedestal of its own, a conspicuous thickening of the basement at regular intervals. The

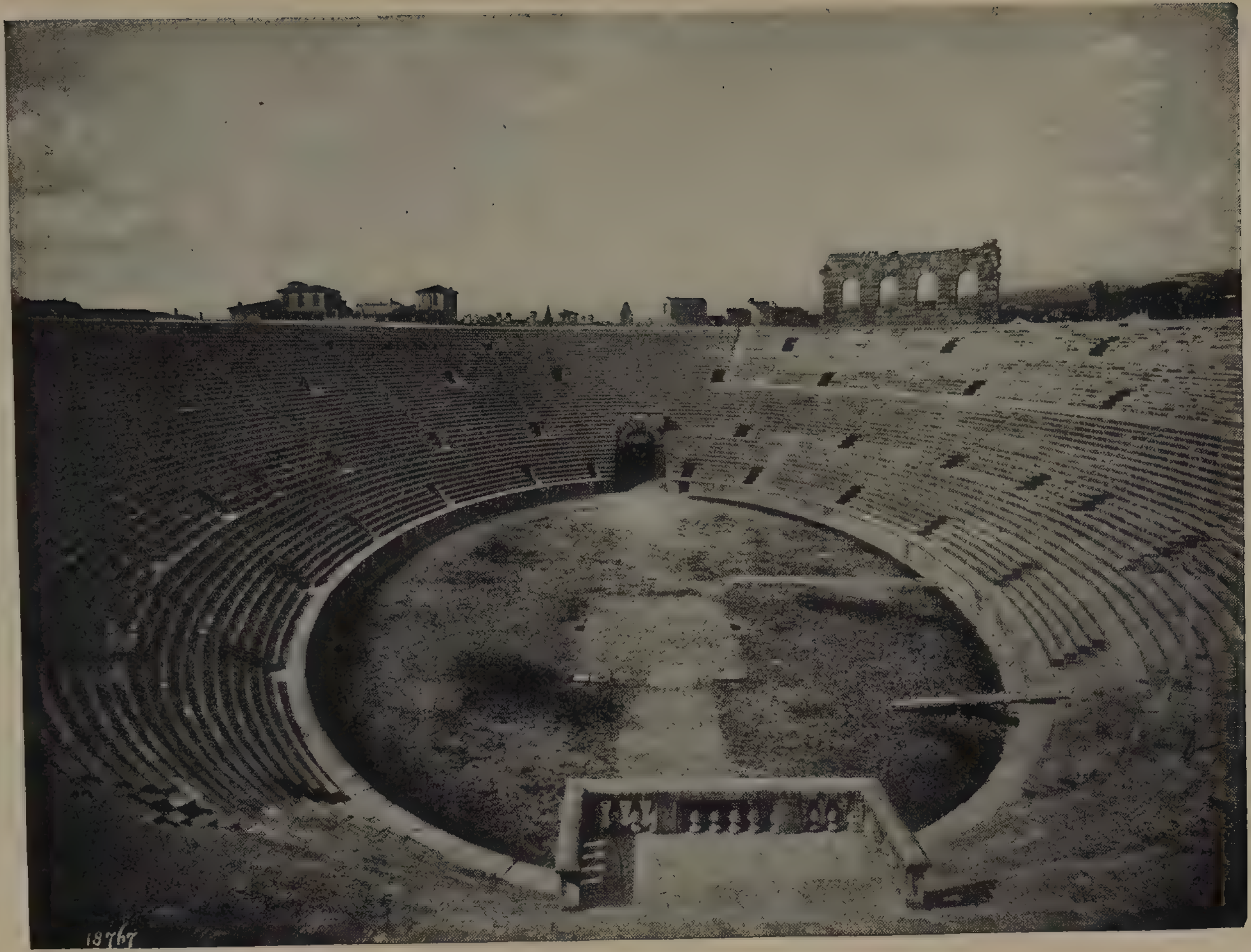

FIG. 24. AMPHITHEATER AT VERONA

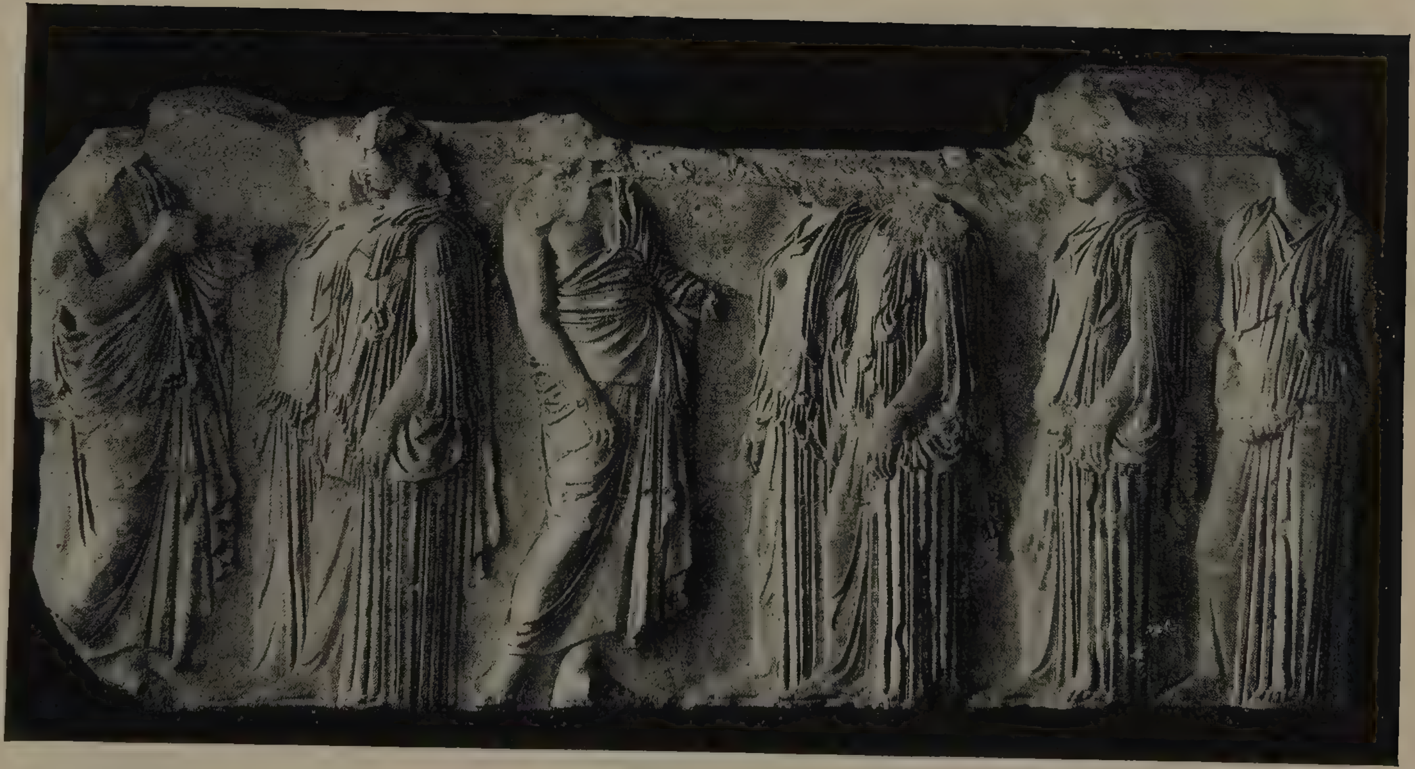

FIG. 25. THE PARTHENON FRIEZE

ground story lacks such a basement and pedestals, and as a result is not so fine in its proportions or so pleasing, as the three upper stories. Low and heavy, the ground story nevertheless gives a sense of solidity and strength which can be defended on the premise that such should be the case with what is really the foundation of so vast a pile.

But whatever adverse criticism may be passed upon the Colosseum, especially with reference to the use of engaged or applied orders—in theory beyond question wrong—the splendid proportion of the whole mass of the building, the just relations which exist among the parts, the sound construction and workmanship throughout, the delightful sense of immeasurable magnitude coupled with the agreeable, unending repetition of arches and orders whereon the light and shade is always varied as it could not be on a flat surface, but must be on one that continually curves—these qualities, and many more, make the Colosseum [10] one of the grandest of architectural accomplishments, as well as the most remarkable building of the Roman Empire.

It may seem that undue emphasis has been laid upon the arch principle, and the forms of vaulting which were derived from it during the Imperial Roman age. Ample justification exists in the fact that the main constructive problem before all architects during the thousand years subsequent to the year 300 (from Constantine to St. Louis) was that of vaulting. Monumental roofs, whether for magnificence, or for security against fire and decay, were the universal ambition wherever and whenever architecture becamereally important. Builders and people had ever before their actual eyes, or the eyes of their imagination, those gigantic achievements of the Roman world which were scattered throughout Europe, the wonder and unapproachable model of all. But why unapproachable? For a twofold reason. As the power and strength of the Empire declined, its resources dwindled—architectural as well as every other. As the resources dwindled the supply of materials and the skill in manipulating them grew less, at first through lack of exercise, later in forgetfulness. Architecture showed this tendency by an increasing lack of skill. Hands were losing their cunning, minds their constructive imagination.

The Roman Empire was dying. Officially it expired in 476 A. D. The Eastern Roman Empire, destined to another century of greatness, was likewise destined to go out. Even the language of the Romans was dying.

But this moribund condition did not last indefinitely nor did movement ever actually cease. New life began to show itself among the remains of what had fallen to decay. This life, so far as it expressed itself in art, primarily in architecture, was born in poverty and bred in necessity. Of this necessity came inventiveness, and this inventiveness worked out a way of building permanent stone roofs, vaults, with means and resources that were trivial compared to those which had been at the disposal of the Roman architects who constructed the stupendous vaulted buildings of the Empire.

Architectural history and, dependent on it, the history of sculpture and, in lesser degree, that of painting, through the thousand years subsequent to 300, is the story of tentative effort and failure, of renewed effort and partial success—in the end absolute success. It is the story of men as far removed from one another as the confines of Europe would permit, all struggling with adverse conditions and all possessed of a common and, in differing degrees, vague architectural ambition, namely, the secure and beautiful construction of vaulted buildings as high and broad as those of the Romans, at a much smaller cost in time, money and material.

CHAPTER III

GREEK AND ROMAN SCULPTURE

It is generally conceded that Greek sculpture attained its highest excellence during the fifth century B. C., when its chief reason for existence was architectural, the decoration of temples. Individual statues, carved without reference to architecture, were common, but of limited number as compared to similar statues, in the full round, made to occupy such architectural positions as the gables of a temple, preeminently those of the Parthenon. The number of individual statues was small in comparision with the number of bas-relief sculptures, figures emergent from the blocks on which they are carved. Such sculpture was used in great quantities for the decoration of Greek architecture. The square slabs (Fig. 9) above the columns on the outside of the Parthenon (Fig. 15), and the continuous band of carving, the "frieze" (Fig. 25), which crowned the wall just below the roof of the surrounding colonnade are most notable examples of bas-relief.

During the fourth century B. C. individual statues, especially of athletes (Fig. 26), monumental objects

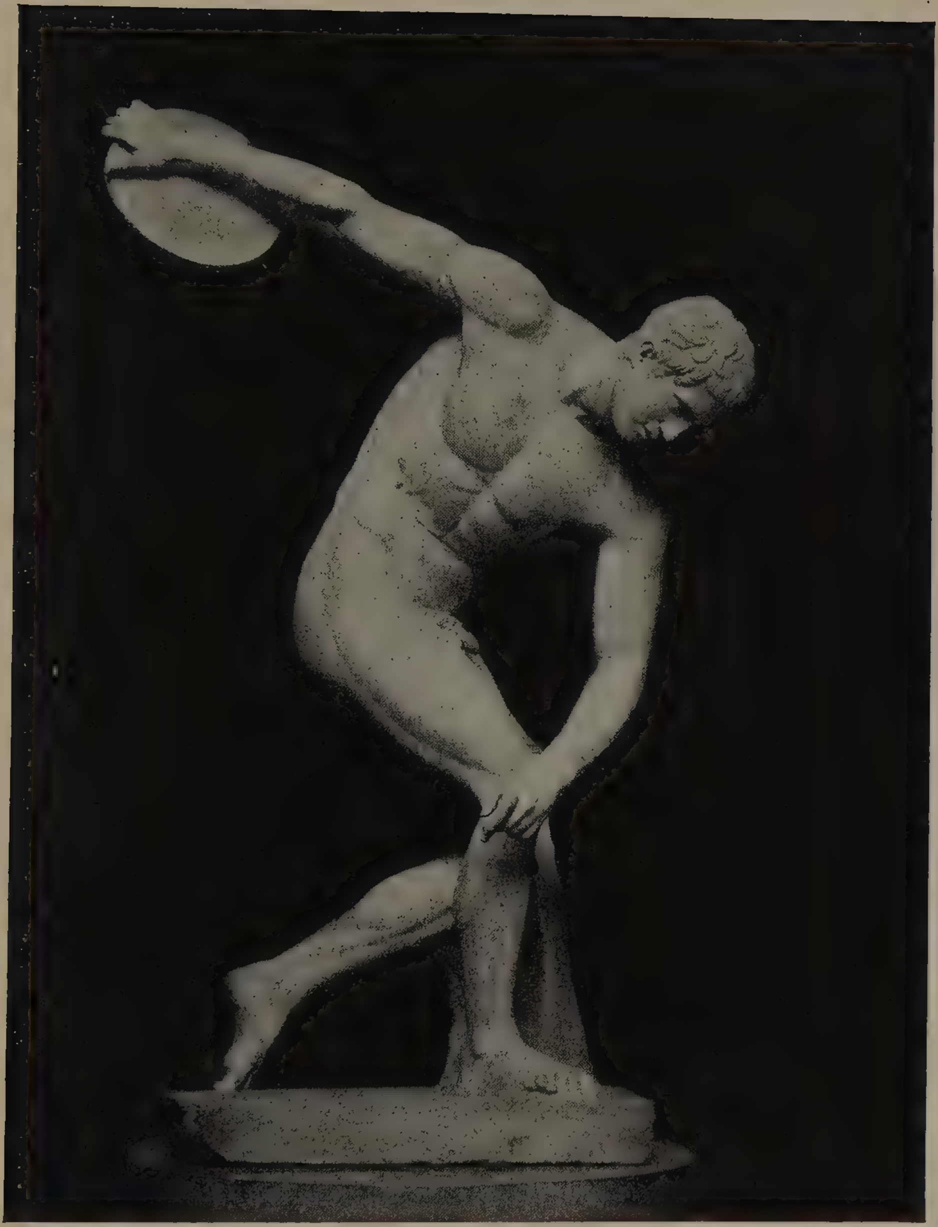

Fig. 26. THE DISCUS THROWER

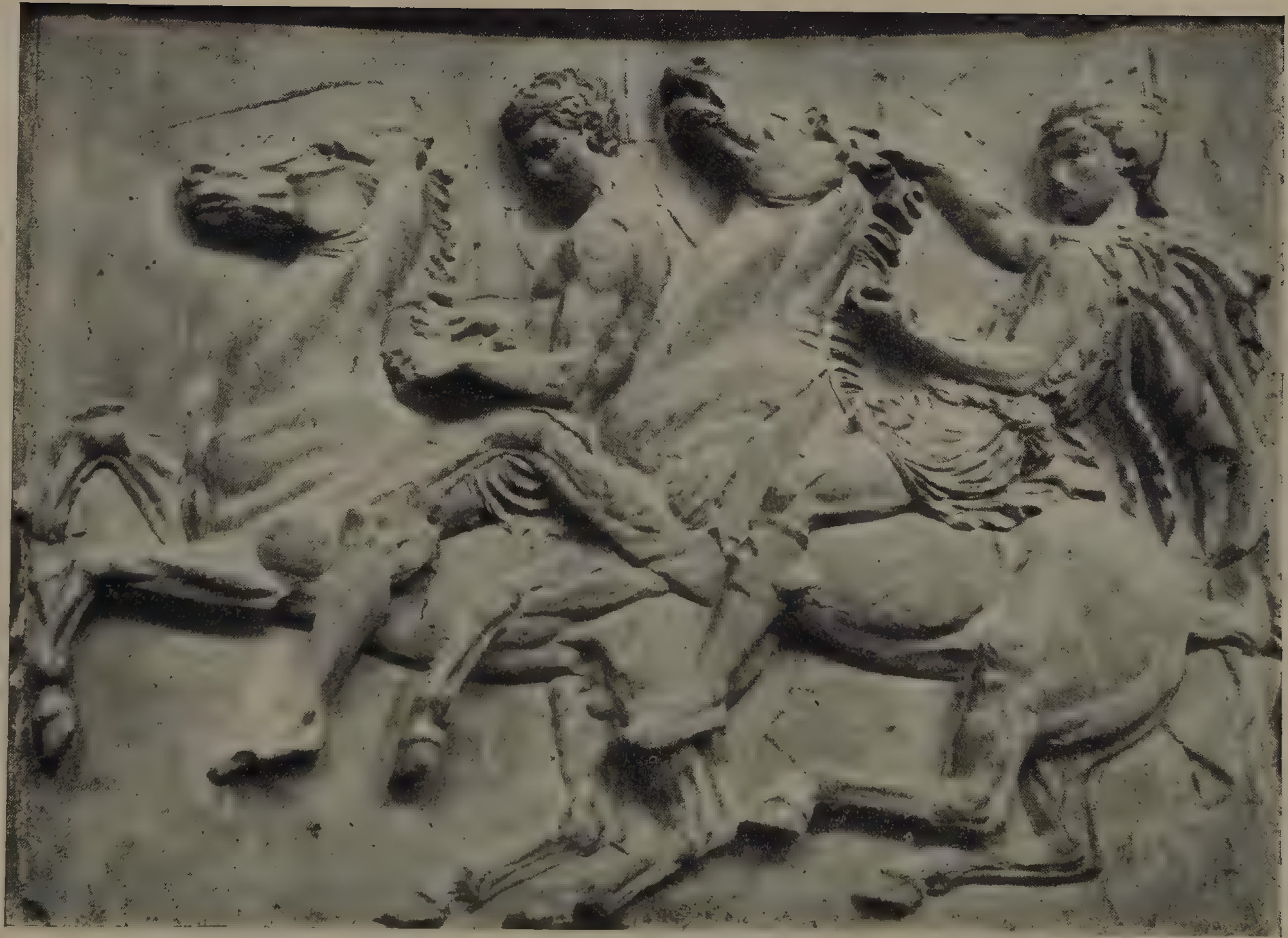

Fig. 27. The Parthenon Frieze

having no connection whatever with architecture, came greatly into fashion, and so continued. During the same century many stelæ (Fig. 28)—grave monuments, that is—single enframed bas-reliefs, were produced. Better than in these wonderful grave stones marble has never been made to express restrained intense sorrow. If not an age of faith, so-called, the time that produced these stelæ must have been one of glorious resignation in the presence of death. One wonders instinctively of what such resignation was born as is seen on the placid features and in the quiet movements of these parting friends.

Barring the athletic statues, and the stelæ generally, the subject of Greek sculpture was religious. Because the Greeks thought of their gods as human beings, but human beings physically perfect, they required the sculptor to represent the gods as physically perfect human beings. The sculptures of the Parthenon, whether the powerful, indescribably serene, and more than human Theseus of the gable (Fig. 7), or the prancing, high-spirited horses managed by sure and easy riders (Fig. 27), or that line of straight draped "maidens" (Fig. 25), in whom all that posture and dress can show of high breeding is declared—these, and all the other figures of the frieze are marked on one hand by a likeness to nature, on the other by potentiality in repose, and in action by a serene commotion, qualities which declare that nature has been carefully gone over for the best models and that, finally, the selected models have been idealized. At its best, Greek sculpture shows us not so much what human kind is as what it might be. Hence its undying inspiration. "That haste which mars the dignity of every act," is absolutely wanting, alike in the treatment and in the subject of fifth century Greek sculpture.

The Theseus is a fine instance of potentiality in repose; an attribute markedly characteristic of the best work of the age, especially that of the greatest of all Greek sculptors, Phidias.[11] There he sits, this Theseus, a young man, rejoicing in his powers, half god, or hero, according as it is the fifth century before Christ or the twentieth after, that is looking at him. Fearing nothing, ready for anything, he is as calm as he is strong. He can put forth great effort; he can do much with that strength when he shall be called on, but he is shown in repose, not in action—potentially able. He suggests might, but he does not show it in deed. He makes the beholder believe him capable of tremendous things physically. He wakes the imagination to thoughts of perfect health and wonderful physique, but he sets no limits upon that imagination. To the Greek he was a strong youthful figure, the very embodiment of human strength, and

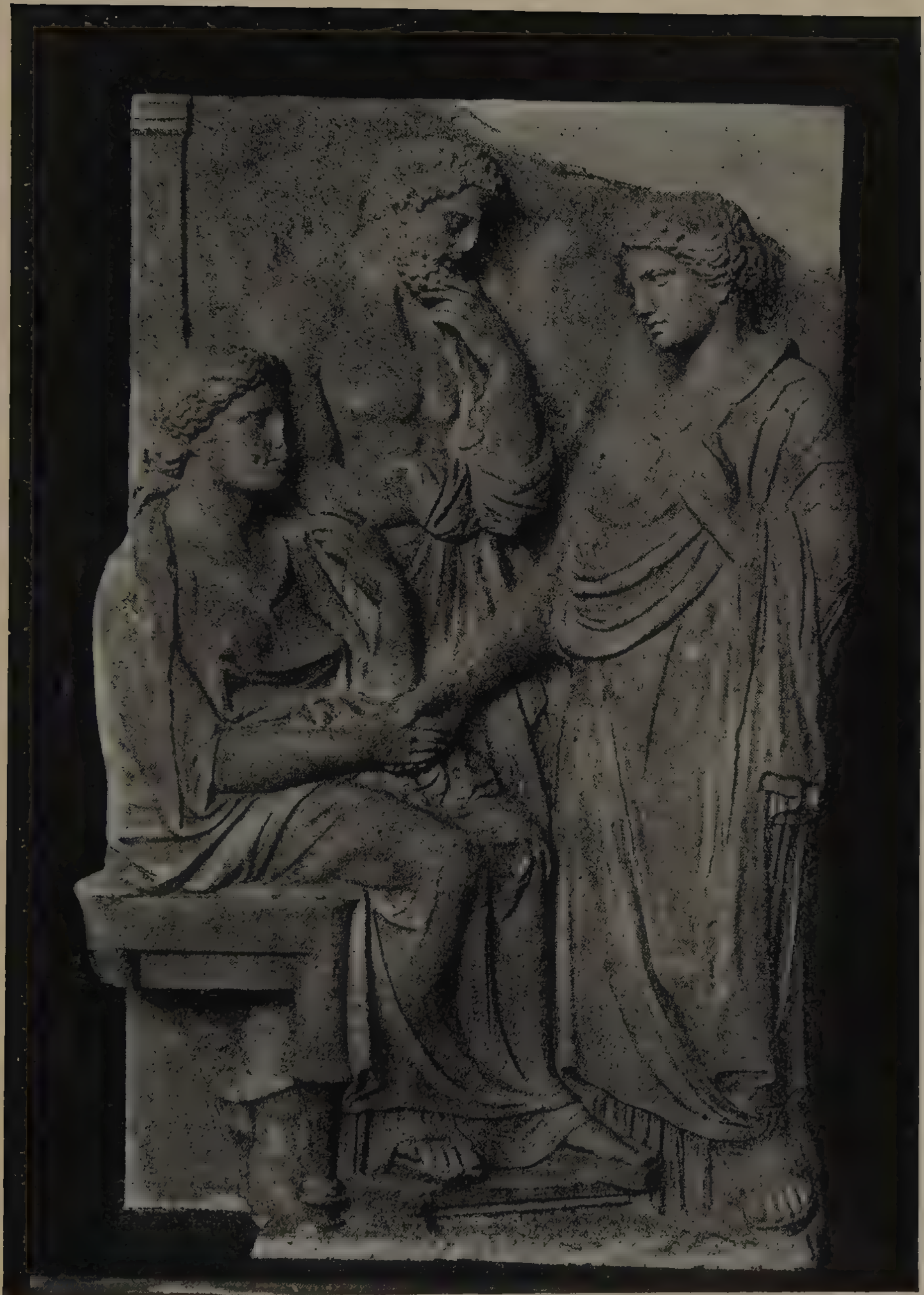

FIG. 28. A GRAVE MONUMENT

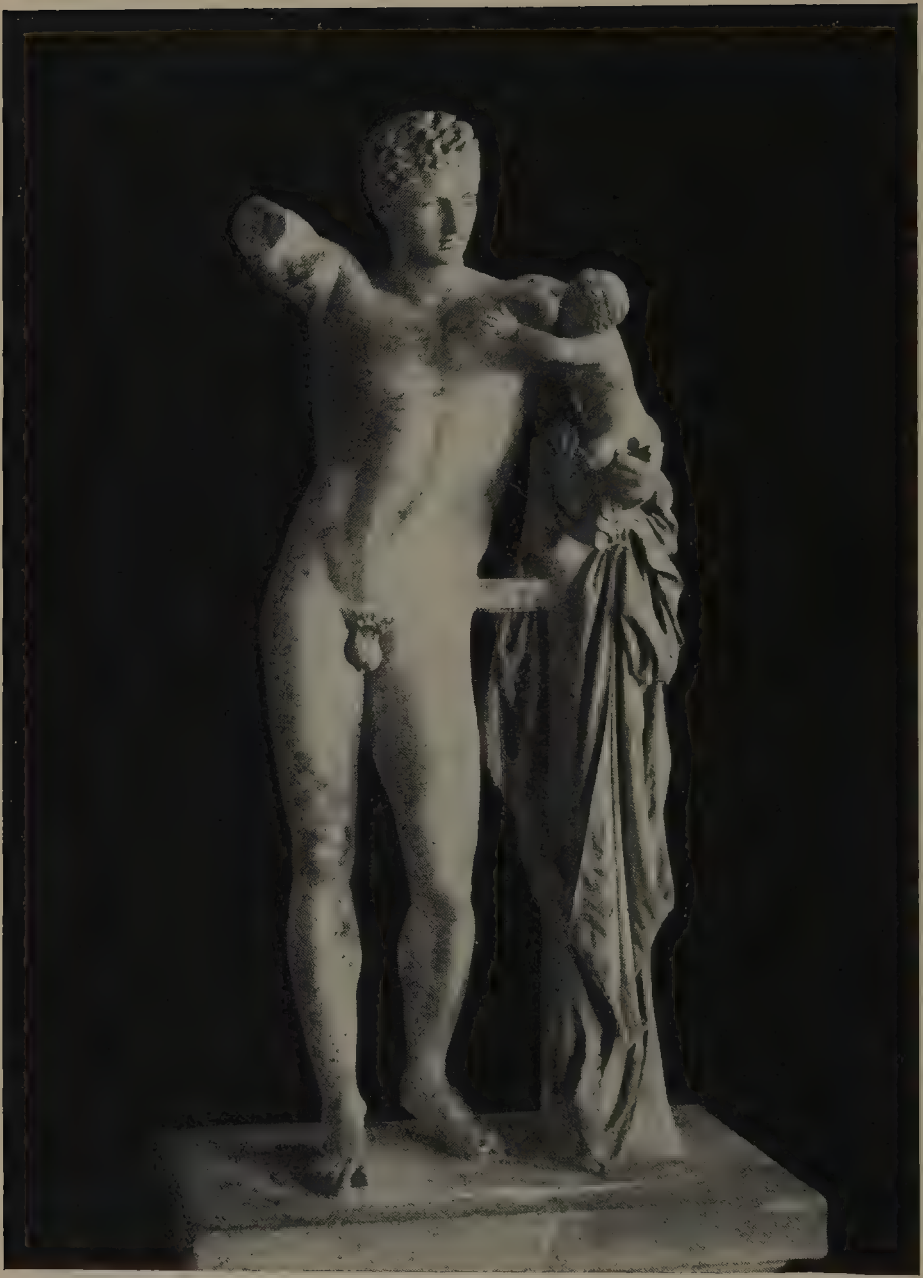

FIG. 29. HERMES BY PRAXITELES

somewhat more than human. He is outside the utmost bounds of known human development physically, yet not beyond what seemed possible to Phidias, and his age. He was the embodiment of ideal flesh, and as such he bore the likeness of a human god. He was the visible expression of a noble type of imagination couched in a recognizable human form of uncommon loveliness, which appealed powerfully, then as now, to the human heart and mind. Phidias' treatment of his subject, manly youth, is far above the actual subject, i. e., any specific instance—unalterable term in the equation of all great art. This is why the spirit of perennial youth clings to the Theseus, battered though he is by the wear of twenty-five centuries of exposure and rough usage. This is why he commands the admiration of men to-day, of men his juniors by five and twenty hundred years. The breath of young manhood will animate this marble so long as any part of it shall remain. In it the forever commonplace, the eternal every-day fact of our mortal image and form is made to show its physical ideality.

By serene commotion is meant that sense which one gets from those parts of the Parthenon frieze which show restless and spirited horses ridden by men (Fig. 27) who are so evidently in perfect command of their animals as to force the onlooker to a conscious realization and acknowledgment of that mental sovereignty of man over brute, which results in physical sovereignty. In the midst of hurry, and great physical excitement, under bodily stress of any sort, the best Greek sculpture declares that the utmost activity of mind, and the largest exercise of intellect, even in the face of ruin and death, may be, and in the noblest men must always be, essentially serene.

"The memory like a cloudless air
The conscience like a sea at rest,"

under the most trying conditions, is one of the great conceptions of mankind about humanity that found expression in Greek sculpture. However, mankind possesses other attributes than strength, and beauty, and repose—namely, emotions. The passions, grief and joy, found little expression in Greek art of the fifth century B. C.

With the opening of the fourth century calm begins to give way before physical activity; strength in figures yields somewhat to over-gracefulness; dignity of draperies tends to mere fluttering prettiness. Gods and athletes are miracles of fleshly beauty, but no longer, as in the fifth century, miracles of marble beauty. In different words, the fourth century sculptor begins to make marble deceptively suggestive of pliant living flesh, or the softness of real cloth. This tendency increased so rapidly that after the time of Alexander

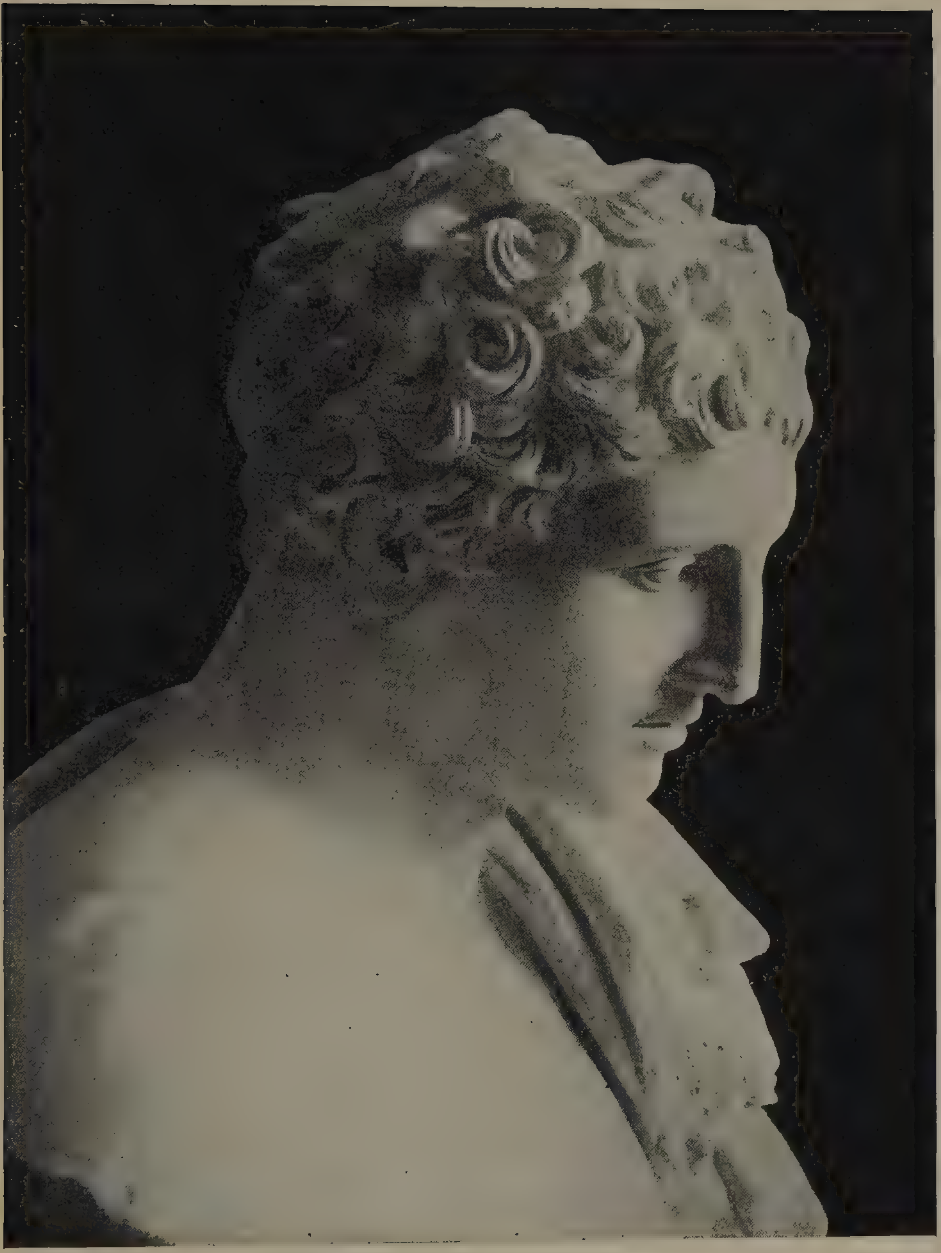

FIG. 30. HERMES BY PRAXITELES. HEAD

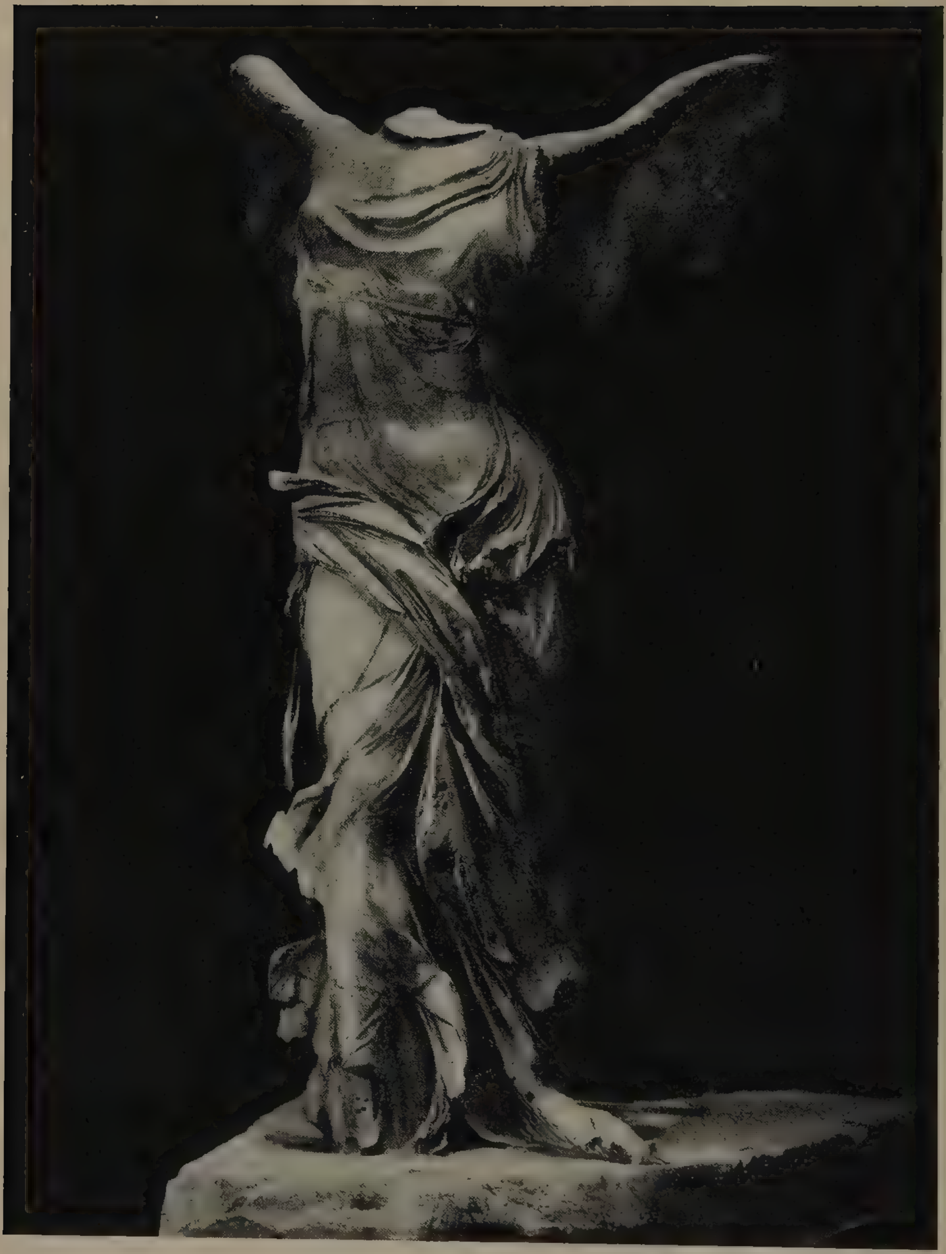

FIG. 31. VICTORY OF SAMOTHRACE

the Great, realism (specious and imitative) became the chief ambition of the sculptor. Such realism sought to be what is now known as photographic, in its representation of individual and minute details, but in accomplishing this, much of the grandeur of earlier sculpture was lost; a grandeur directly due to breadth of conception and execution, and the acknowledged effort to portray an ideal human being in the recognizable terms of reality.

The fourth century B. C. is represented at its best, and a glorious best it is, in the single known authentic work of Praxitiles, the Hermes (Fig. 29). The face (Fig. 30) suggests a reflective turn of mind not expressed in the features of fifth century statues. Furthermore, the hair is treated in a naturalistic fashion, and is not like the hair of fifth century heads—precise and orderly, wave upon wave, ringlet upon ringlet, all easily countable.

In the Victory of Samothrace (Fig. 31), which belongs to the very end of the fourth century, perhaps fifty years later than the Hermes, we see a further development, and one of the most beautiful examples of energy, if not the most, ever produced in marble. The manner in which her draperies, evidently thin, cling to her body and bind against her flesh as she sweeps forward through the air is as new as it is noble. This Victory belongs to the earliest years of the so-called Hellenistic period, the time between the death of Alexander (323 B. C.), and the conquest of Greece by Rome (146 B. C.): Hellenistic in contradistinction to fifth and fourth century Greek, Hellenic.

The so-called Dying Gladiator (Fig. 32), really a dying warrior of Gaul, is a very notable example of sculpture which exhibits bodily suffering and anguish of heart in a manner that is the extreme of realism.

Much later, dating as it does from about 50 B. C., is the Laocoön group (Fig. 33), the wonder of wonders so far as realism and the expression of bodily suffering are concerned, but not to us, who know the work of the fifth and fourth century Greek sculptors, is it the highest expression of Greek genius, as it was to Lessing and an age unacquainted with Phidias and Praxitiles.

The carved ornament of moldings (Fig. 34), capitals and many minor structural parts of Greek architecture, was at once conventional and vital. The inspiration, the subject, for such ornament was drawn mainly from the vegetable world, leaves, fruits, stems and flowers—though artificial forms such as ball, egg and arrow shapes were of frequent occurrence. It was conventionalized ornament, because it was subjected to inviolable laws of repetition and rhythmical arrangement of parts, while the parts themselves—the elements of the design—were expressive of a few

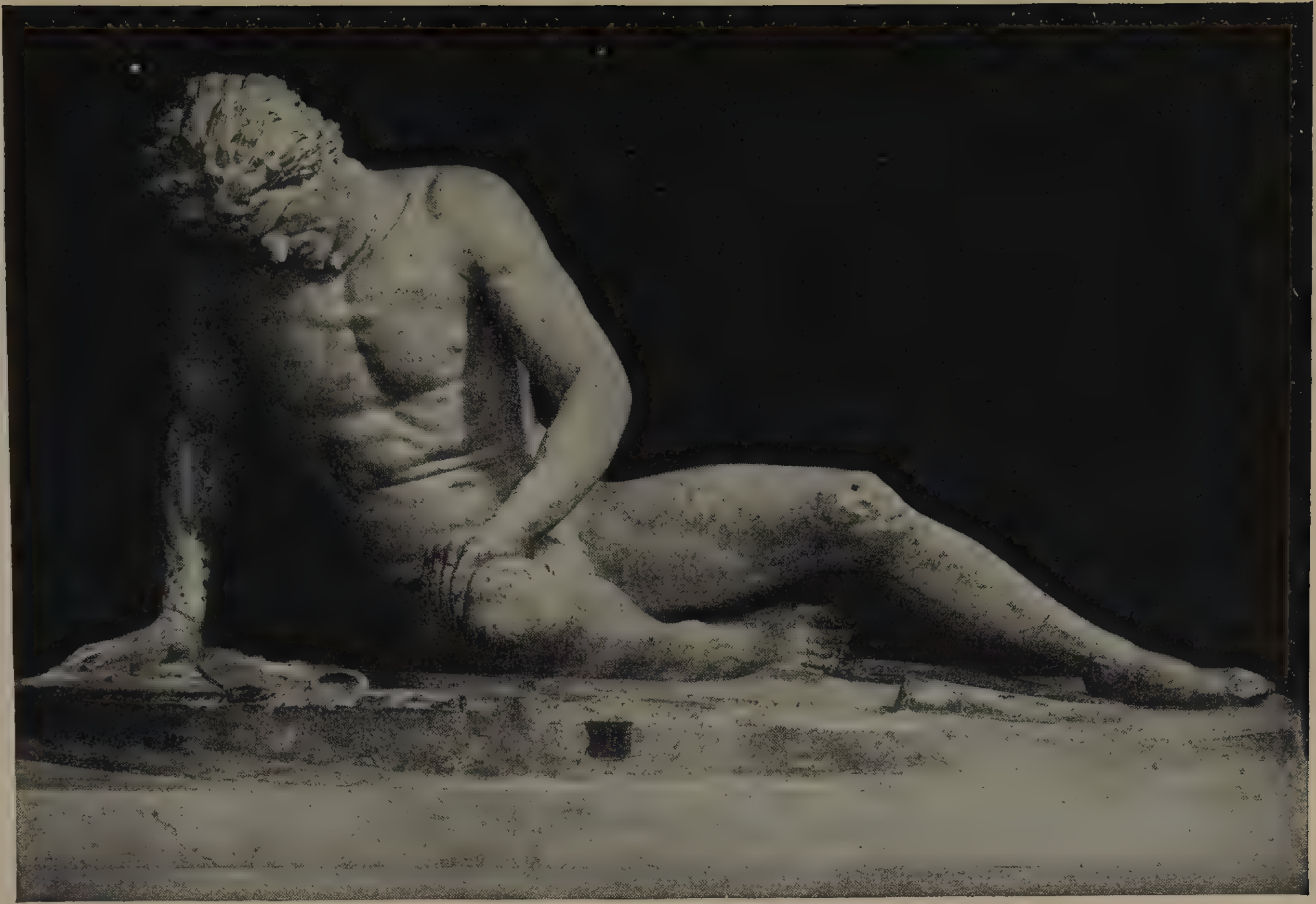

Fig. 32. Dying Gaul

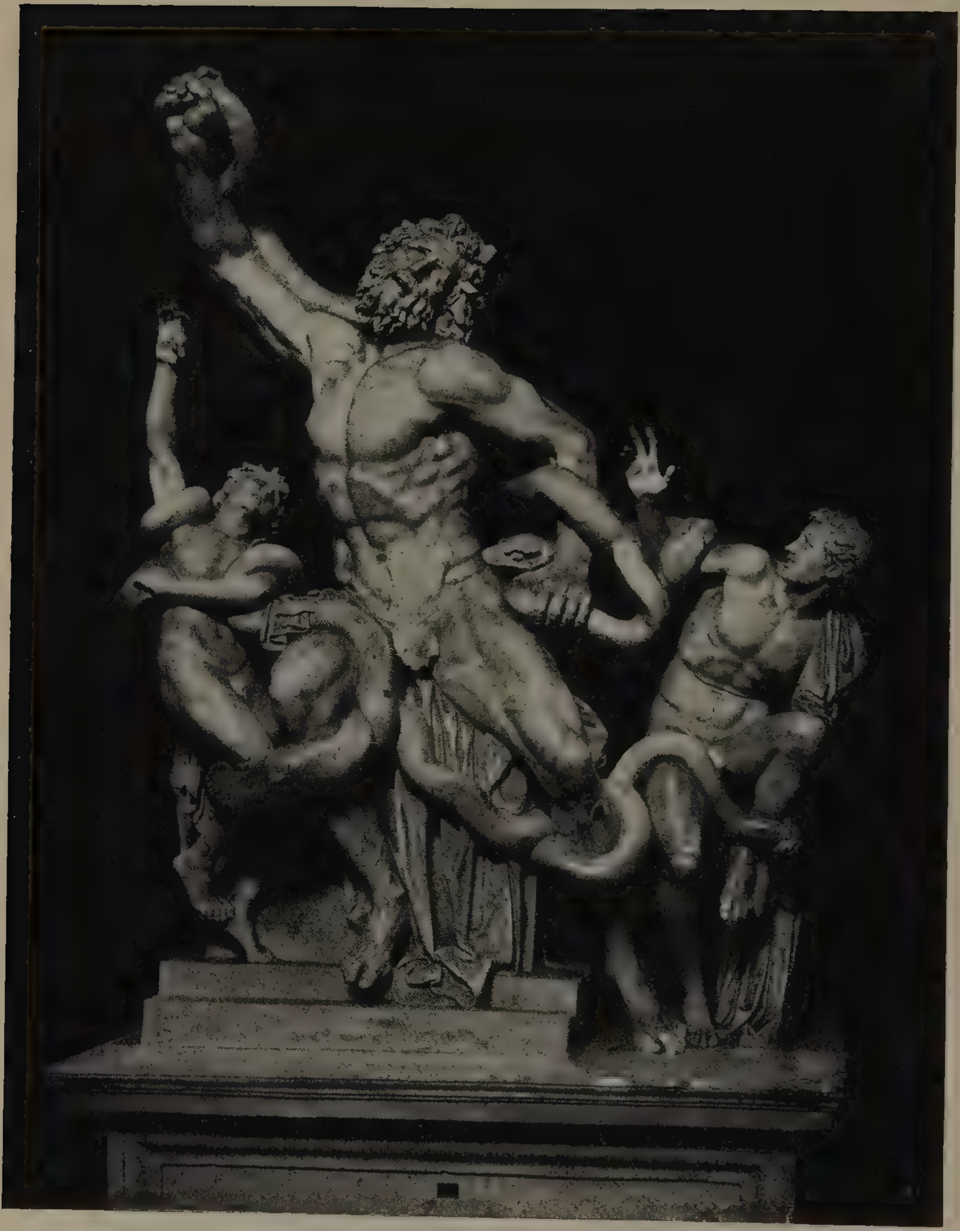

FIG. 33. THE LAOCOÖN

carefully selected, characteristic attributes of the model; never complete copies of the natural object which served the designer as model. Such ornament was vital in that every one of the parts, which taken together made up the complete design, was possessed of its own peculiarities, and maintained its individuality among many species, as in nature every leaf on a tree is an individual, yet one of a fixed species. In other words, the artificial unity and precision of good design was accompanied by some of the living variableness of nature. Hence the unfailing interest and beauty of such design. The Greek looked upon design, and conventional design in particular, as a thought-out pattern; an agreeable arrangement of spots and spaces among spots. Then he went as far as he liked with making the spots take on some, or many, of the characteristic appearances of known objects of the world—men, animals, or plants—which served him as the materials or elements, inspiration really, for his design. A good pattern, whether the designer was making the frieze of the Parthenon, or chasing a golden plate, or decorating a pottery vase, had first of all to be rhythmical; possess a balance of part and part, space and space, and a sequence among the parts, i. e., appearance of being bound together or naturally related to one another, in a word, ordered and orderly. To such a pattern, to such an underlying and agreeable arrangement, the Greek added much or little realistic representation of natural objects, and the exquisite appearance of natural things. He passed through all stages, from that of wretched human figures—considered as figures—which girdle many an early vase (Fig. 35) with extraordinary grace, grace of pattern solely; through the "leaf and tongue," or "egg and dart" stage of fifth century moldings (Fig. 34), until at last he crowned all efforts to naturalize or humanize a pattern in that *ne plus ultra,* the Parthenon frieze (Fig. 27). In that frieze pure pattern, or design, akin to spirit, is clothed in marble reality, as spirit with flesh in living man. In that frieze the lovelier the figures are in themselves the more they subject themselves to the underlying design or pattern of which they are the natural and naturalistic witness; the visible and lovely vesture.

In Roman art sculpture of course occupied an important place, but as the special ornament of architecture—moldings, capitals, etc.—it was distinctly second-rate as compared with similar Greek ornament.

At the close of the Hellenistic epoch of Greek art, and subsequent to the year 100 B. C., when everything Greek became the fashion at Rome, there was a temporary reaction against extremely realistic sculpture,

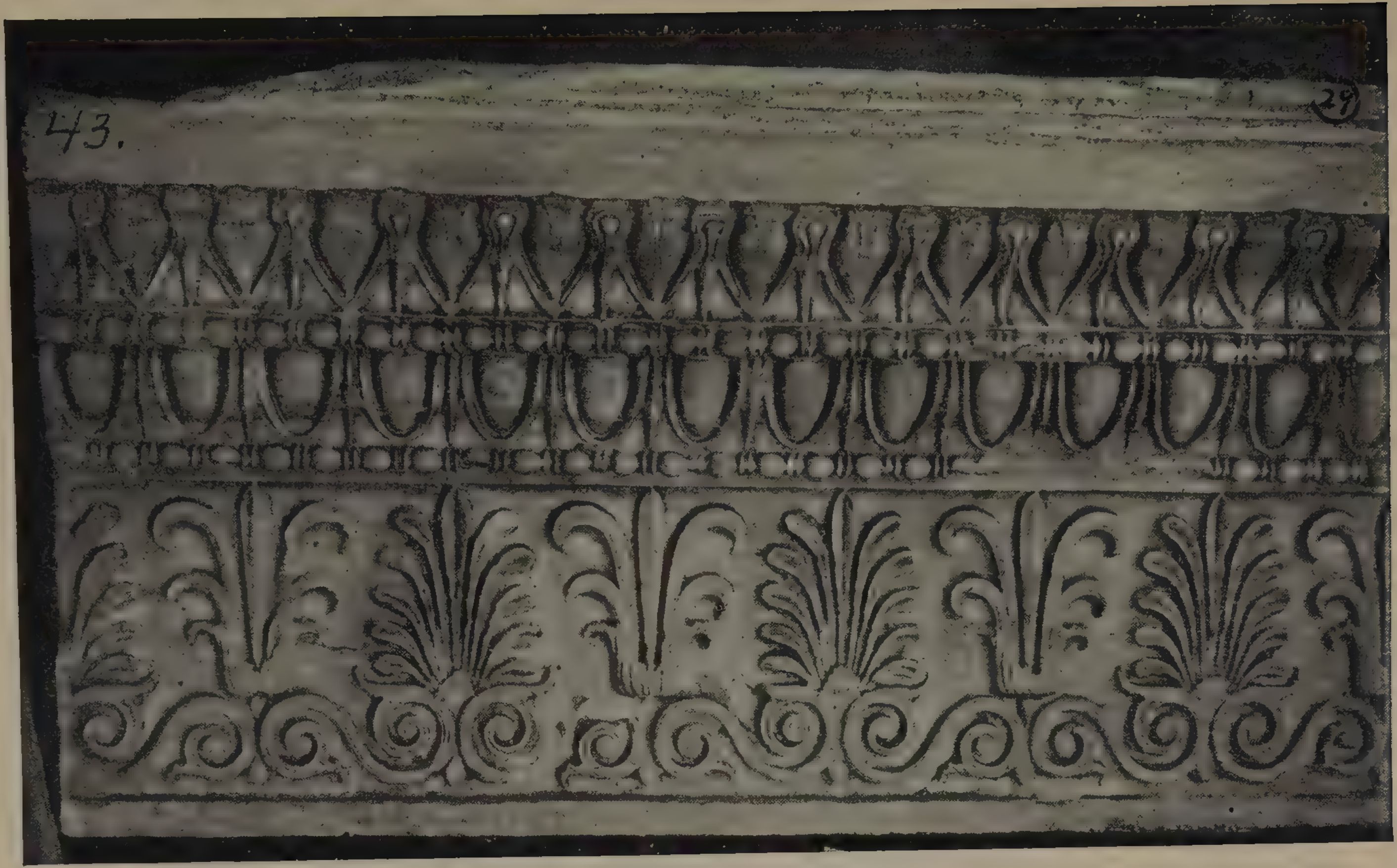

Fig. 34. Carved Molding from the Erechtheum

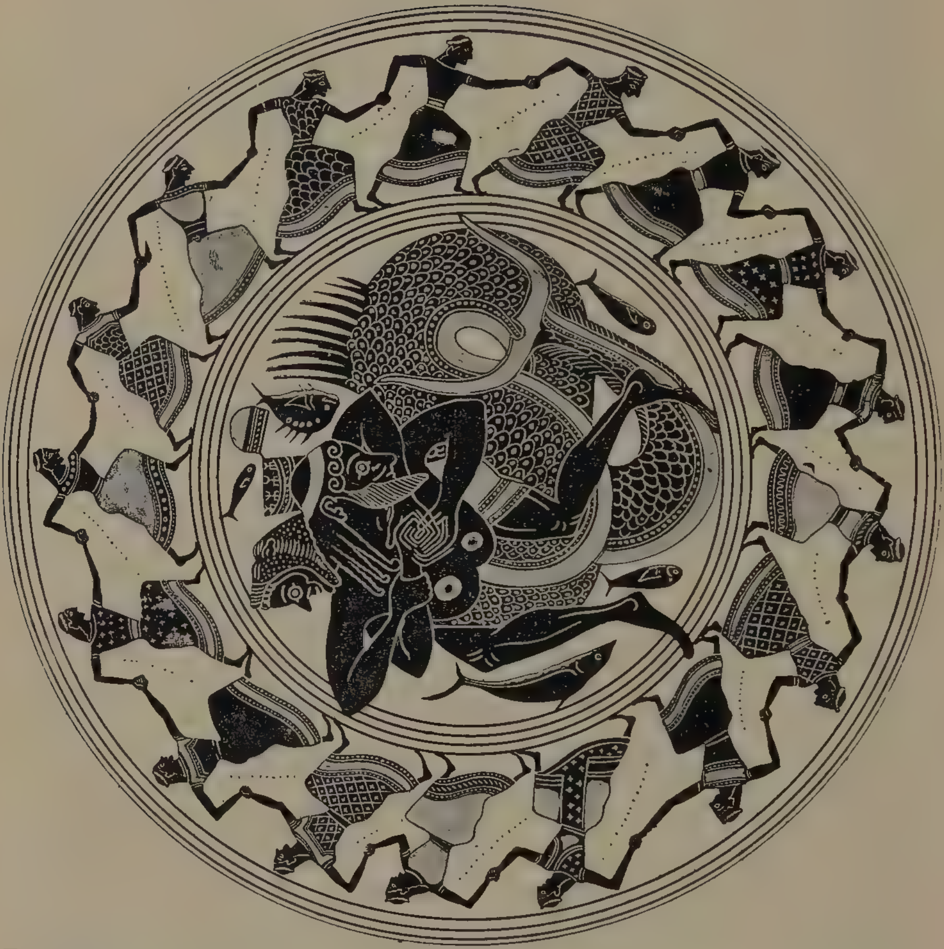

FIG. 35.
DESIGN ON THE INSIDE OF A GREEK VASE IN THE MUSEUM AT CORNETO

and the over-exaggerated expression of agony, anger and pathos—in fact, against all forms of artistic emotionalism and sensationalism. The good results of this reaction, which in a measure means returning to the style and the ideals of the fifth century Greeks, showed itself in Roman sculpture just before, and after, the birth of the Empire. One variety may almost claim Roman origin—a splendid variety—that of portrait statues. Of this class no example is more commanding than the "Augustus Cæsar" (Fig. 36), and none more attractive than the "Young Augustus" (Fig. 37). These two works are not idealizations. They are accurate representations of the youthful and the manly features of the emperor; powerfully realistic, yet calm restrained work about which there is a suggestion of the Phidian marbles. While this sculpture lacks the transcendent power and beauty of those marbles it is nevertheless fine, and infinitely finer than what had gone just before. But this tendency did not continue long. There was a speedy return to the style of the "Dying Gaul," and a rapid decline in the quality of that style.

In general it may be affirmed of the Romans that they gave their sculpture, as they gave all else that they undertook, a character of usefulness. Portrait statues, from the "Augustus Cæsar" to the commemorative wax image of the dead of unknown families, were all meant to serve as likenesses. The same is true of Roman historic sculpture, the bas-reliefs of the Arch of Titus for example, on which are displayed the golden spoils of the Temple—table and candlestick —which the Emperor Titus brought away from the destruction of Jerusalem, or the bas-reliefs of Trajan's Column, showing with accurate and detailed realism many of the events in the campaigns against the Dacians. Their chief purpose was historic and narrative, and they were not thought of before all else as being necessarily decorative. The narration of facts rather than the creation of beautiful designs was the goal at which the sculptors of these and many similar bas-reliefs aimed. Artistic confusion was the result.

In the bas-relief representing the Triumph of Titus (Fig. 39), which is one of the best works of the period, it is impossible to say whether the four horses are abreast, and whether they are moving straight forward, or along a diagonal course. That there were four horses is an historical fact stated without confusion so far as narrative goes. As a work of art, on the other hand, this bas-relief is confused. In striving for realism the artist has made his work impossibly unreal, in the sense that it is untrue to sight. It records what the mind knows—the fact of four horses. It does not record what the eye sees

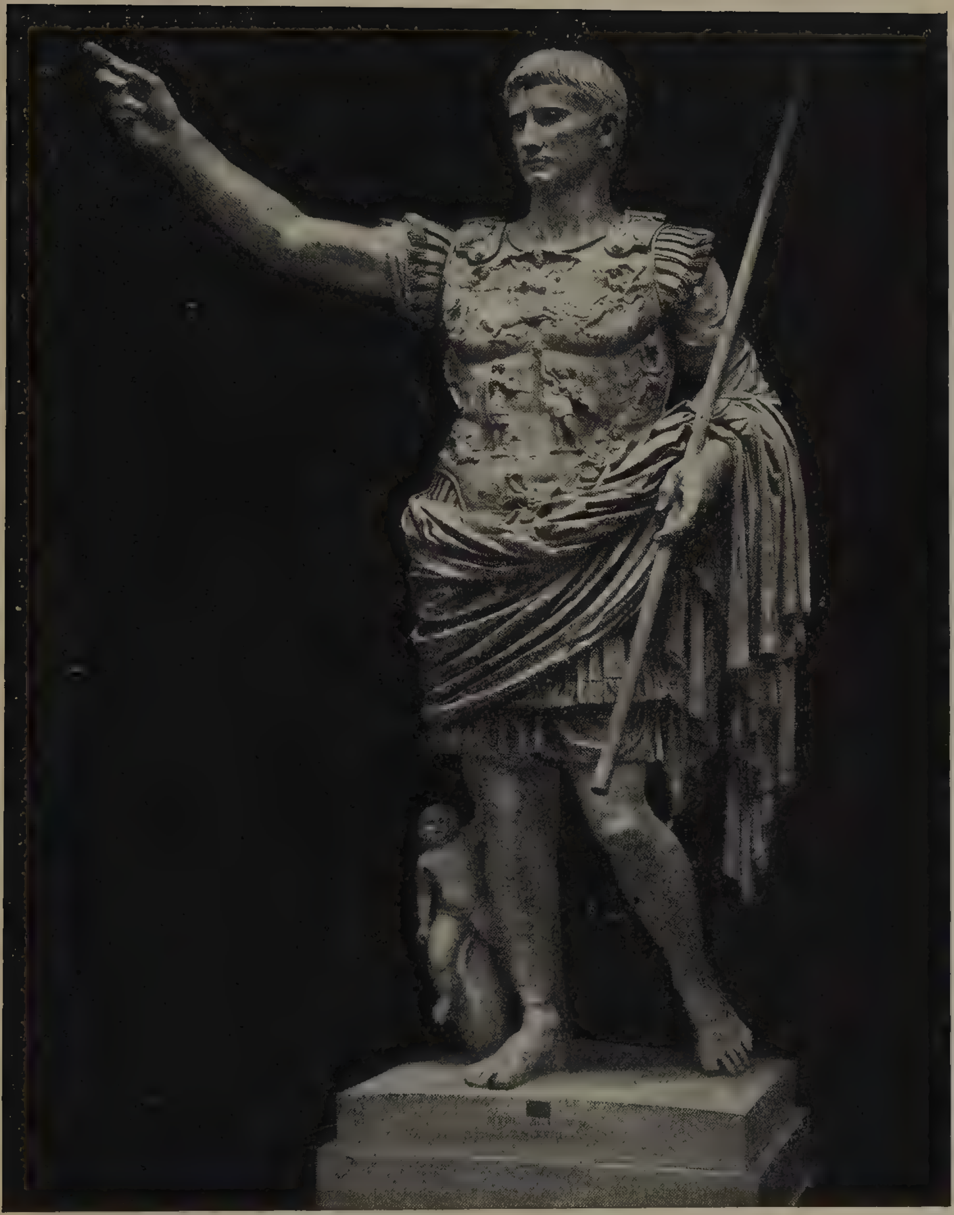

Fig. 36. AUGUSTUS

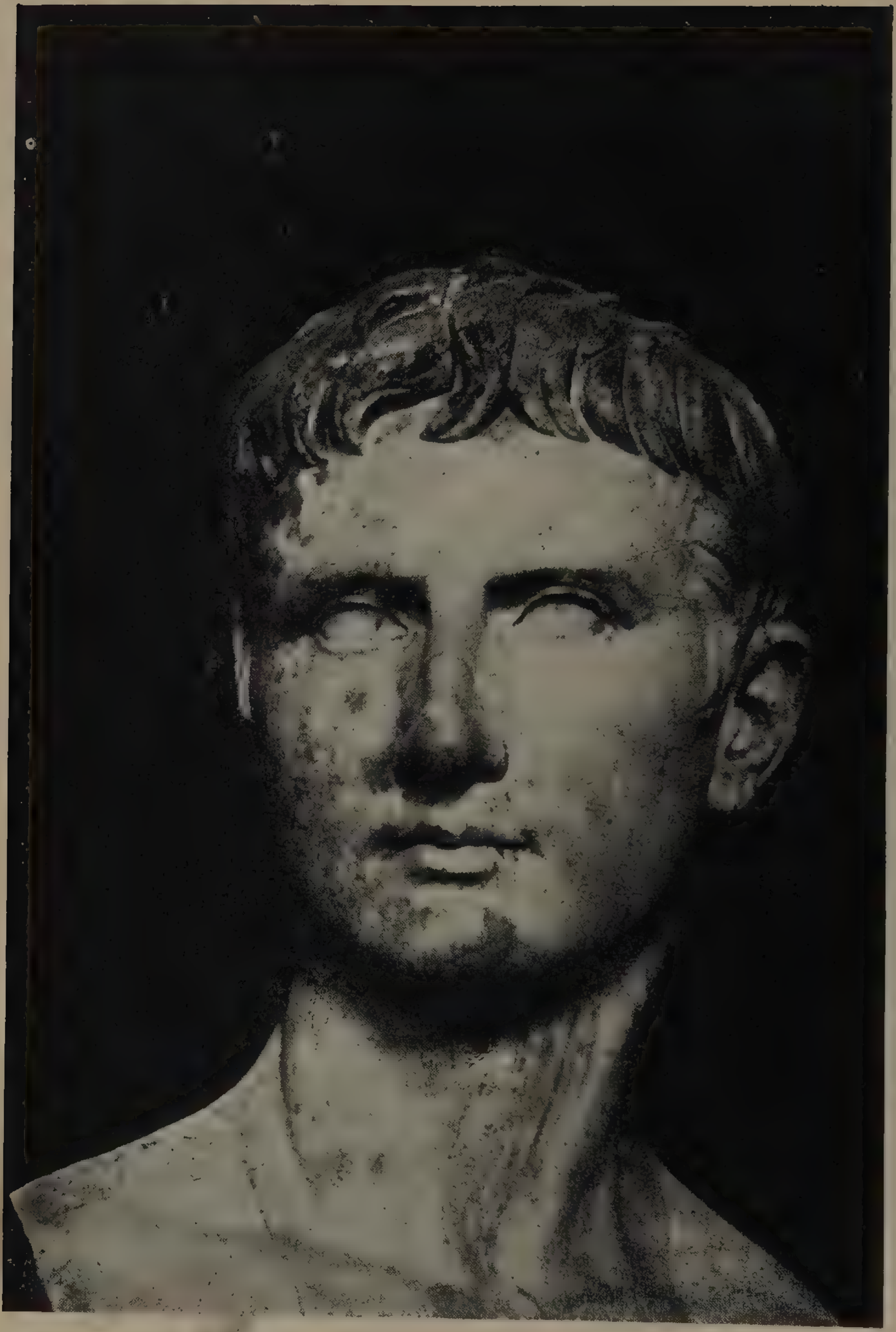

FIG. 37. THE YOUNG AUGUSTUS

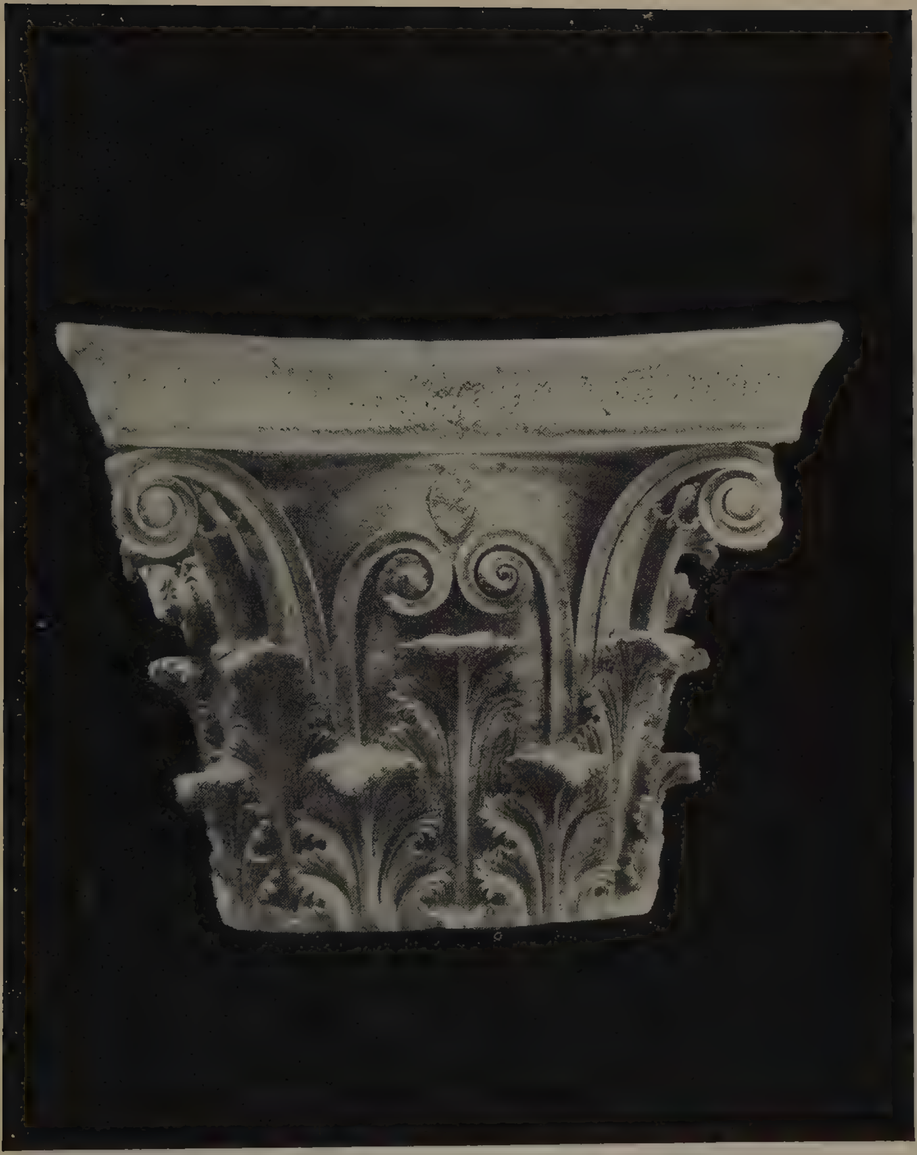

Fig. 38. GREEK CORINTHIAN CAPITAL FROM EPIDAURUS

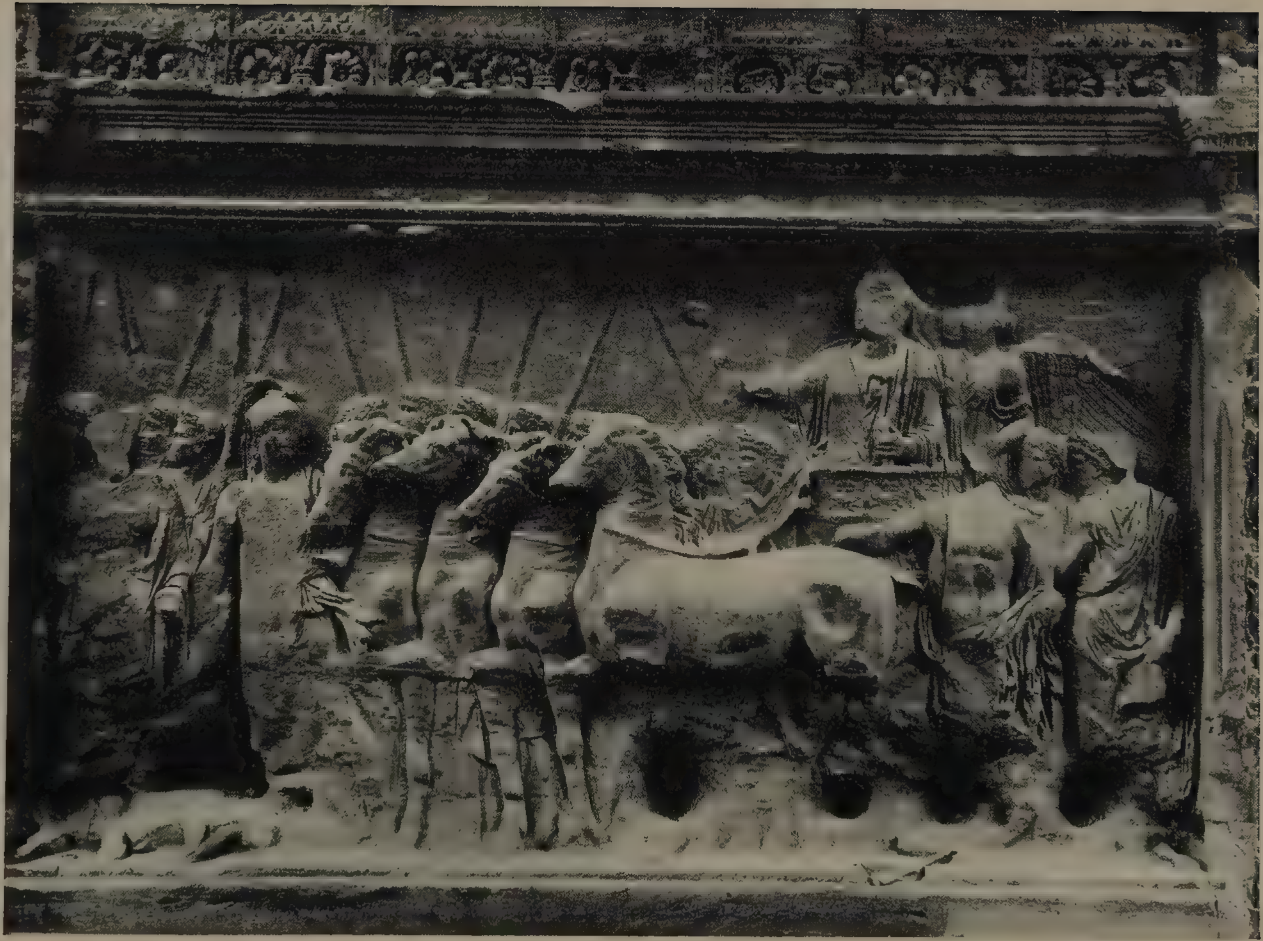

Fig. 39. Sculpture on the Arch of Titus

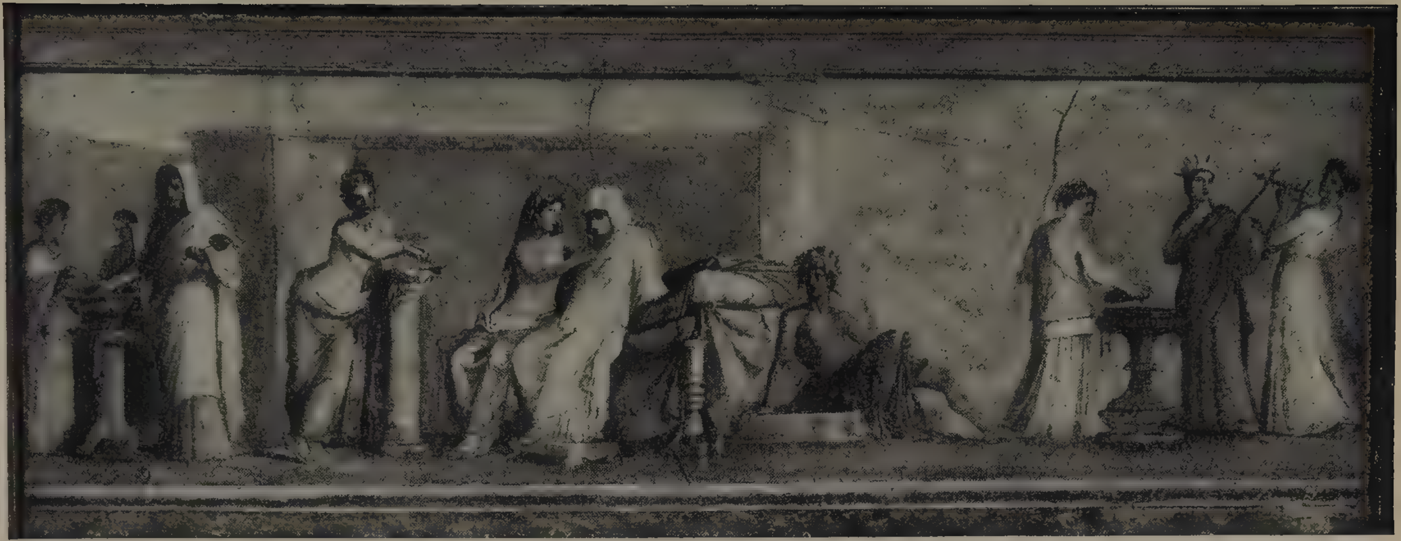

FIG. 40. THE ALDOBRANDINI MARRIAGE

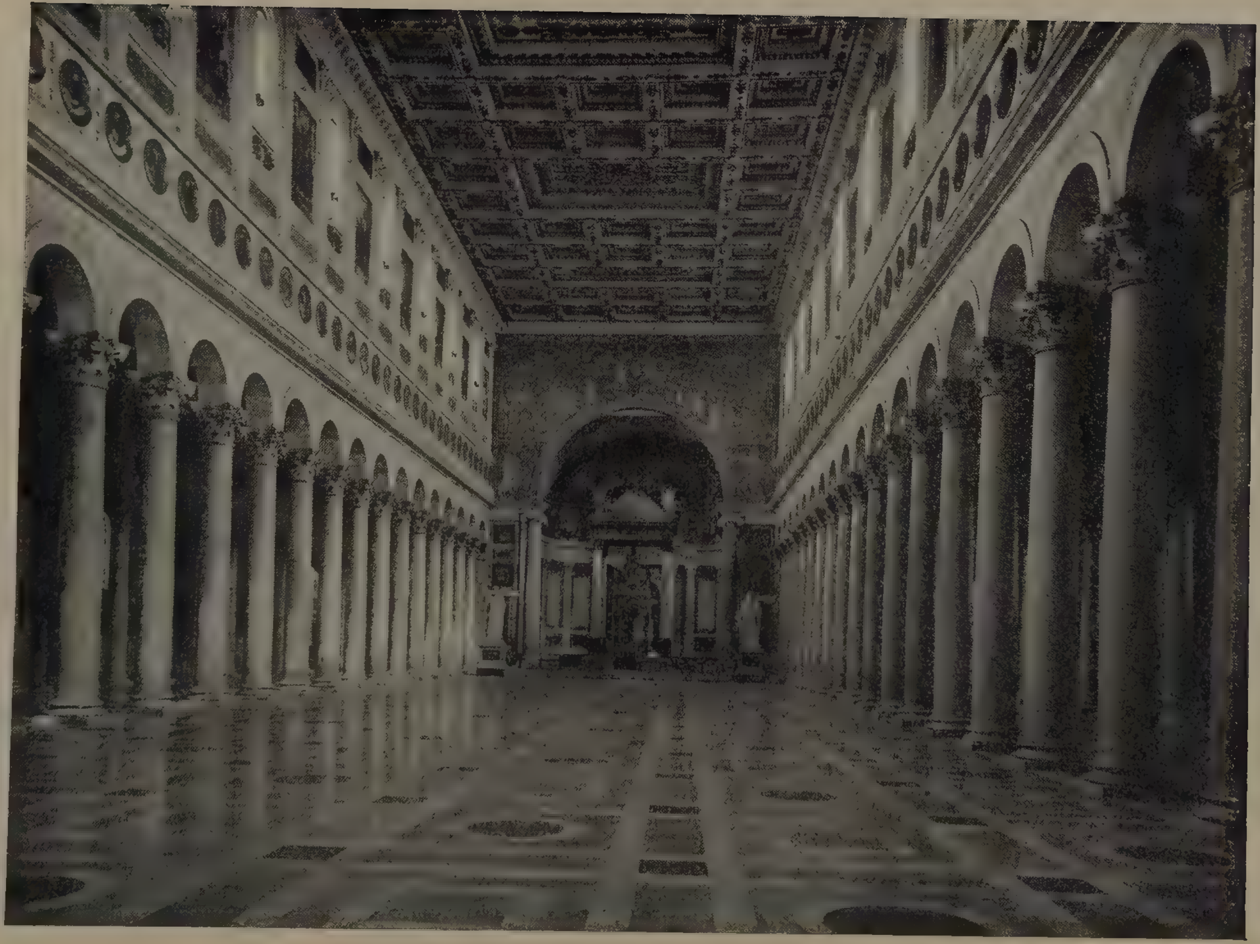

Fig. 41. St. Paul's outside the Walls. Interior

when four horses are moving forward abreast. It is therefore artistically untrue which is the same as confused. Compare for example the horses and riders of the Parthenon frieze (Fig. 27).

Lavish ornament, based upon leaf and fruit forms, was applied to Roman architecture. Design of this sort was often very elaborate and much of it was naturalistic and coarse. It rarely approached the excellence of similar Greek work. Quantity was as a rule set before quality. Restraint ceased to be virtue. The value of conventionalization was forgotten. Display was set before everything else. That exquisite regard for subtlety of outline and curvature of surface which forever declares the Greek to have dwelt understandingly, hence lovingly, upon all foliate forms, is largely wanting in Roman work of the same general character. Lines that the Greek sculptor bent so slightly as to appear at first glance straight, and surfaces that he curved so delicately as to look almost flat—the Greek Corinthian capital (Fig. 38) from Epidaurus for example, curved and bent as are the surfaces and lines of natural things, acanthus leaf, or oak, or sea-shell—the Roman sculptor made either absolutely straight or very swelling, frequently producing travesties of nature by substituting dull sight and coarse handling for clear seeing, and gentle loving touch. This may be in a measure explained by the fact that the demand for quantity put on Roman artists was so much greater than that put upon Greek. But no amount of explanation will ever do away with the fundamental truth of "the glory that was Greece," or "the grandeur that was Rome." Neither will any one even begin to understand and appreciate truly the real worth of one, or the other, until he comprehends the respective aims, means and ends of the Greeks who made beauty a religion, and those of the Romans who made a god of practicality.

The great works of the classic painters of Greece are known to us only through literary accounts.

Roman frescoes and mosaics, whether found in Rome or in the smaller towns, such as Pompeii, judged intrinsically as works of art are relatively unimportant; judged as a means of decorating architecture they are of marked importance.

Fresco is the art of painting on wet or fresh plaster with water color. Hence its name, meaning fresh. When the plaster dries the picture becomes an integral part of the wall on which it is painted. The obvious advantage of such a method lies in its permanence. The frescoed design, or picture, will not rub or wear off easily. Dampness does not attack it. Light will not fade it. Frescoes technically well executed last for centuries. Of such the so-called "Aldo-

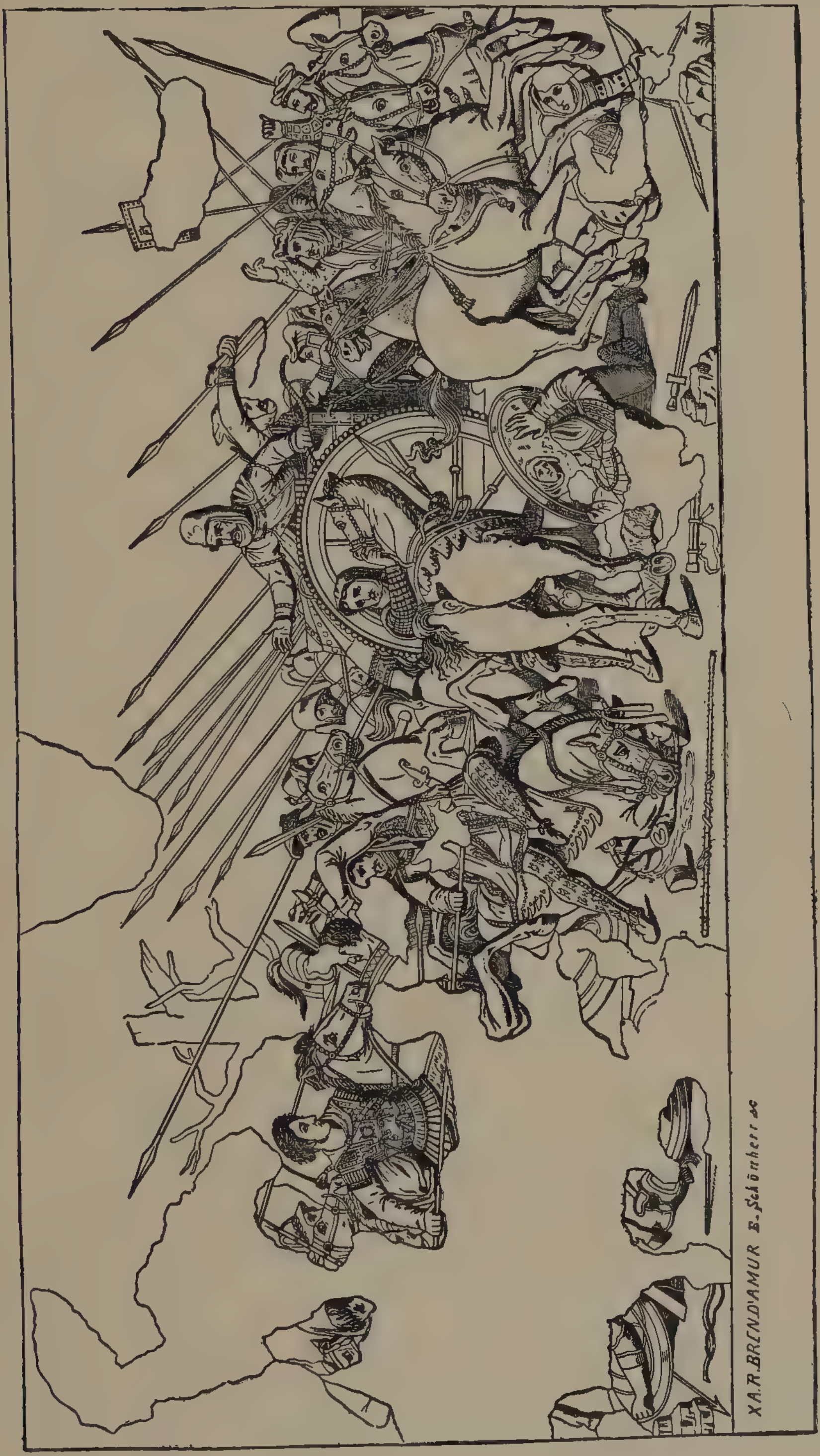

FIG. 42. BATTLE OF ISSUS

brandini Marriage" (Fig. 40), discovered at Rome in 1606, is perhaps the best example. It is the ghost of a beautiful painting; enough however to bring Wordsworth's lines to mind:

> "Men are we, and must grieve when even the Shade
> Of that which once was great is passed away."

True of Roman painting, this is even truer of Greek. Scarcely the ghost of it remains.

Mosaic is the art of making pictures by embedding bits of colored stone and glass in cement or plaster. It is a very splendid method of decorating walls, vaults and floors, for with it the greatest brilliancy, and absolute permanency of color, can be obtained. The technique is coarse as compared with that of painting, but for certain decorative purposes it has never been surpassed. Mosaic pictures were used by the Romans on walls, ceilings and pavements, the materials varying from semi-precious, even precious stones, to glass and bits of glazed pottery, and in size from pieces an eighth of an inch to several inches across. Pompeii alone has furnished many examples of mosaic decoration, of which the "Battle of Issus" (Fig. 42) is one of the finest examples. It has the added interest of being generally accepted as a copy of an important Hellenistic painting at Alexandria.

CHAPTER IV

CHRISTIAN ROMAN ARCHITECTURE

The fourth and fifth centuries A. D. were destined to a great decadence of prosperity in the Western Empire, especially in Italy and particularly in Rome. It was the age of those Barbarian movements and invasions which culminated with the sack of Rome, and the formal dissolution of the Empire in 476. This was the period during which Christianity came into the open, and vastly augmenting the number of its adherents year by year, became firmly and permanently established. During the earliest years of Christianity, and later, during the period of its struggle for life with paganism, down to the last general persecution (286 A. D.), the Christians, relatively few in numbers and not rich, could use, and were satisfied with small buildings for places of meeting and worship. During the persecutions they often used the larger, though never really large, subterranean chambers of the catacombs—those confused and endless passageways and burial vaults, together with their chapels, which were excavated in the soft rock under Rome. But when at last Christianity was legally recognized, and later when it had become the religion of the masses, there at once arose a demand for large, often very large, buildings in which vast companies of the faithful might gather together for mass and to hear preaching. This was the condition at the close of the fourth century and during the greater part of the fifth. It was also, as has been said, an age that saw a marked decline in civic prosperity, which meant of course a diminution of general resources, material and intellectual alike. This in turn implied a falling off in the means for building, and finally in the science and art of construction and architecture.

The generation that saw the completion of such a magnificent vaulted structure as the Basilica of Constantine witnessed the beginning of this decline, made officially evident to the world by the removal of the government from the banks of the Tiber to the shores of the Bosphorus. Thenceforth, for centuries, Rome was to grow more and more powerful spiritually, and physically weaker. Her physical weakness expressed itself in many ways, among others, in her architecture. Her spiritual fervor and power showed to no small extent, in the same manner, i. e., in the building of churches. The decline of knowledge and skill in construction and architecture, together with the lessening of the actual resources of building material within the command of the church, as compared with

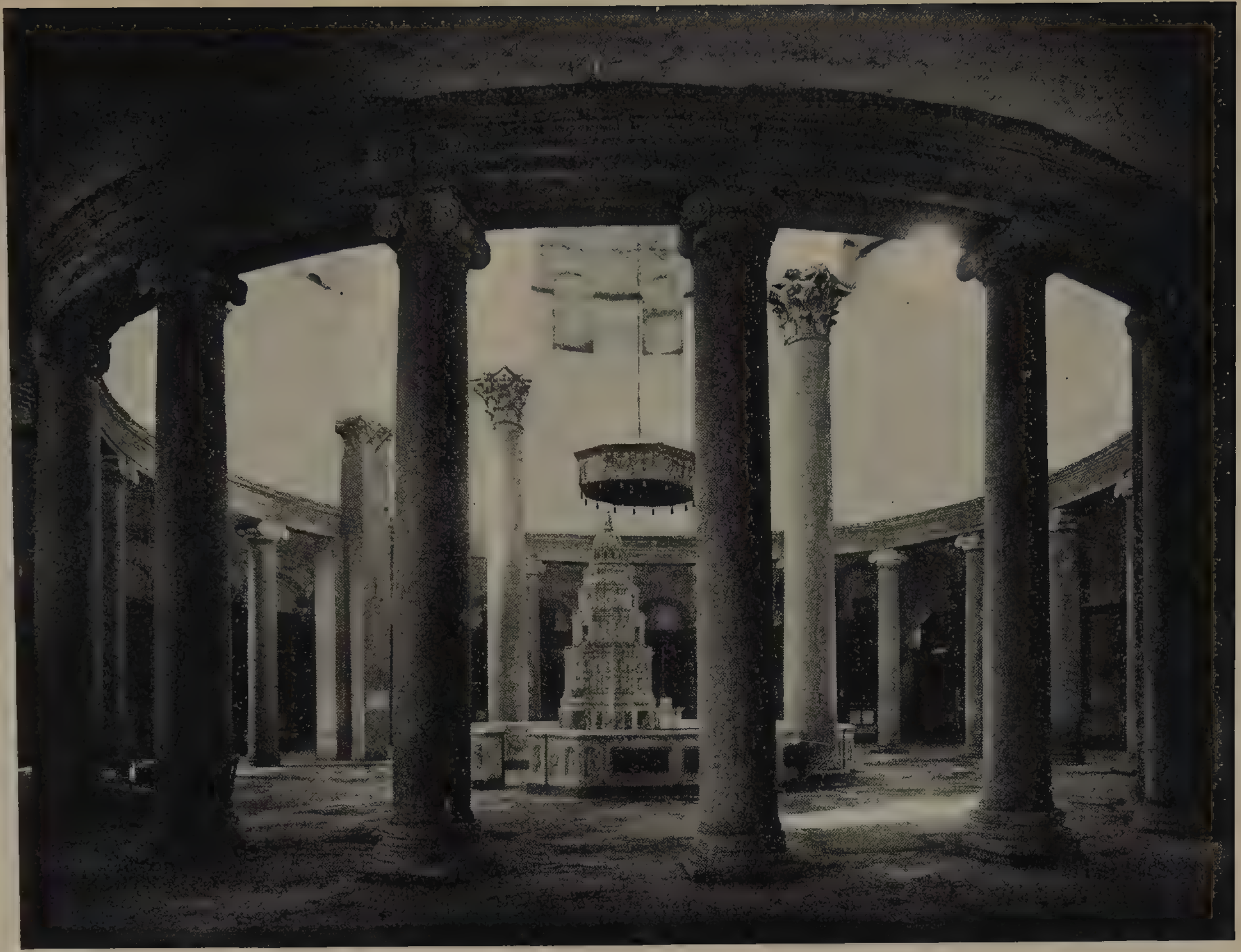

FIG. 43. ST. STEFANO ROTONDO. INTERIOR

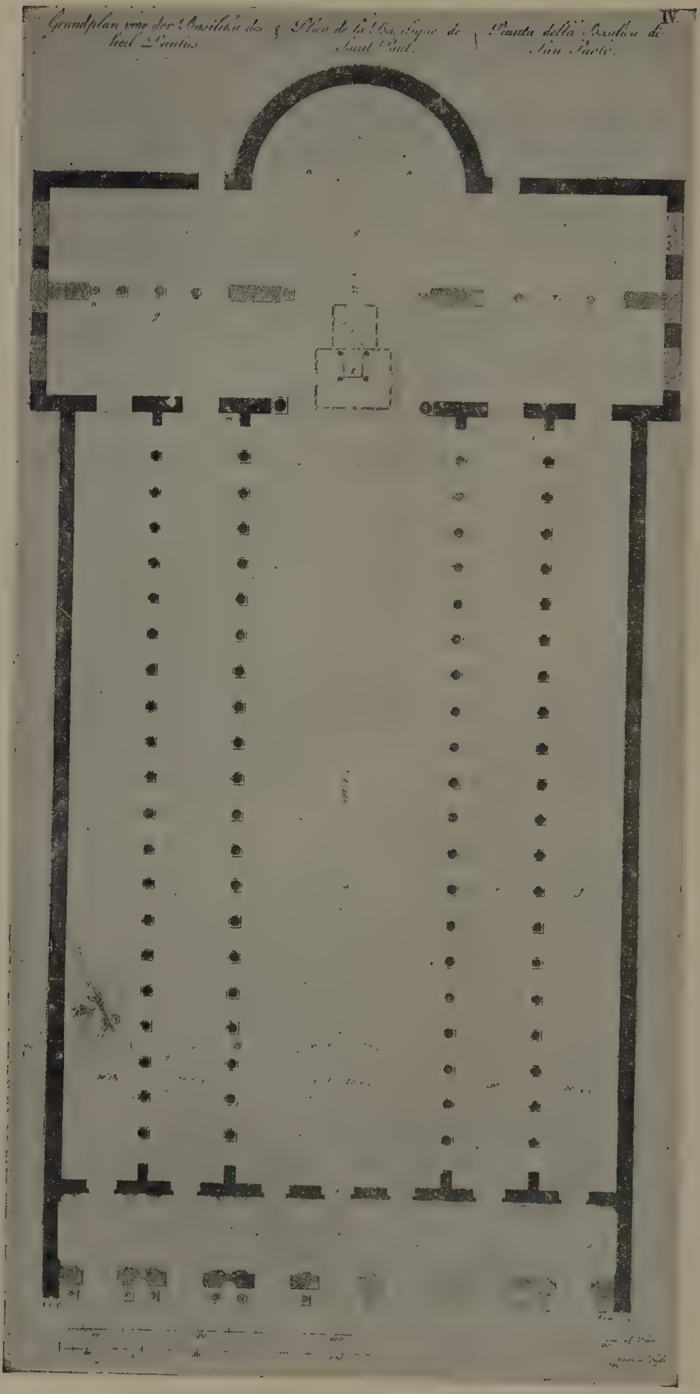
Grundplan von der Basilika des heil. Paulus
Plan de la Basilique de Saint Paul.
Pianta della Basilica di San Paolo.
IV.

Fig. 44. St. Paul's outside the Walls. Plan

similar command under the Empire one or two centuries earlier, were shown by a general though not universal return to post and lintel construction; to the plan and many of the structural expedients of the fifth century B. C.; to comparatively slender columns, thin walls, and most significant of all, timber roofs.

The finest early Christian churches,[12] always interesting and often beautiful, were of this sort. None was structurally remarkable, or permanently enduring. "St. Paul's outside the Walls" in Rome (Fig. 41) offers a characteristic example. It is a well-known fact that the buildings of the Empire in Rome, notably the Colosseum, were used as quarries by the builders of later ages. These buildings furnished a large part of the material, much of it ready cut and carved—columns, capitals, cornices—used in the construction and ornamentation of the early Christian churches and all other buildings erected in Rome for centuries.

In St. Paul's, rebuilt since the fire of 1823 but closely following the original lines (Fig. 44), a wide nave is flanked by double side aisles. The nave is separated from the inner side aisles, and those aisles are separated from each other, by rows of Corinthian columns. The spaces between the columns are spanned by arches (Fig. 41). This making columns the direct and sole support of arches was a new feature and one wholly at variance with classical principles whether Greek or Roman. It is at once a sign of architectural decadence and architectural regeneration. Other churches in Rome of the same period, S. Maria Maggiore for example, had the spaces between the columns spanned by lintels. Of these early Roman churches, usually called "basilicas," there were in all thirty-one.

In St. Paul's the nave arches, and in other basilicas the nave lintels, carry a high wall, in the upper part of which there is a row of windows. This row of windows is called the "clerestory," the windows admitting light directly, being higher than the roofs of the side aisles.

A timber roof covers the nave. This roof rests on the walls. The roofs above the side aisles are simple lean-to's—slanting timber roofs which lean against the wall of the nave at a considerably lower level than the eaves-line of the nave roof. In St. Paul's, thin enclosing walls and slender columns are the only supports required for the comparatively light roof. In the Basilica of Constantine walls and piers of enormous thickness were required to carry the weight and stay the thrusts of vaults.

On examination, the plan of St. Paul's will be seen to differ in one important respect from the plan of a Greek temple (Fig. 22), the Parthenon for example, or that of an Imperial Roman basilica such as

Constantine's (Fig. 19). In these latter buildings the rectangular enclosures are divided throughout their length into nave and aisles, by rows of columns, or piers, while in St. Paul's the rectangular enclosure is intercepted by a cross portion placed (Fig. 44) at right angles to the nave and the main axis of the building. This was destined to a great development in mediæval architecture—to become that splendid feature known as the "transept." Still another feature of importance, originating, as has been said, with Roman architecture and transmitted to the Middle Ages by the Christian Roman builders, was the apse. The purpose of the apse, like that of most features of Imperial Roman buildings, was eminently practical. In Christian architecture the apse served admirably as a place for the altar. It was the place of the judge's seat in the Roman basilica such as Constantine's, which was primarily a hall of justice, or a court. In the later Middle Ages the apse came to be the typical form of termination for the choir of continental churches great and small.

Christian Roman architects in the fourth, fifth, sixth centuries, and after, not only constructed basilicas on the general plan of the Basilica of Constantine, with timber roofs in place of vaults, but also circular and polygonal buildings bearing a resemblance to the Pantheon, but likewise timber roofed instead of vaulted. These circular, sometimes polygonal buildings, with or without concentric aisles, served the Christian office of baptism most conveniently, and

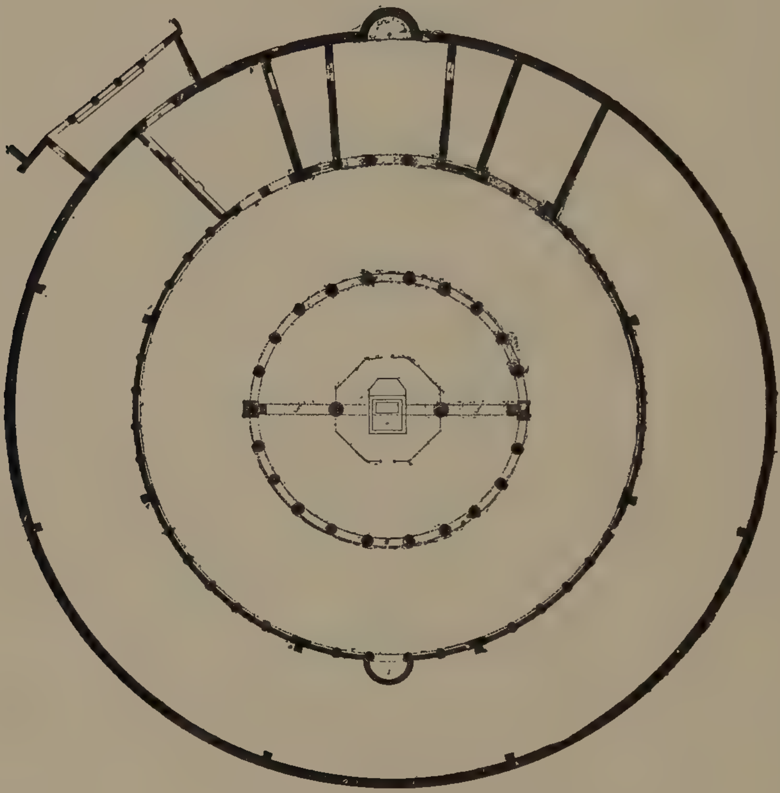

FIG. 45. ST. STEPHANO ROTONDO PLAN

from these buildings were derived the baptisteries of the Middle Ages. St. Stefano Rotondo (Fig. 45), in Rome, second half of the fifth century, is an important example of early Christian circular building. It is two hundred and ten feet in diameter, with inner and outer aisles concentric with the enclosing wall, both aisles running around a central circular space which is, in a manner, analogous to the nave of a basilica.

The columns of the outer circle are connected by arches (Fig. 43). The columns of the inner circle are connected by lintels. The inner columns carry a high wall and a clerestory. The outer aisle is roofed with a timber lean-to resting against the high wall of the central compartment. A timber roof, much like the timber roof of the nave of St. Paul's, covers the central circular compartment. There is reason for believing that the central part was originally open to the sky. The columns were taken from older structures. The conception and construction of this building are clearly the same as in St. Paul's, or any other Christian Roman basilica, allowing of course for difference of shape—the circular and the rectangular plans.

One important feature of the exterior of the Christian basilicas should be noted; one not infrequently applied to the circular buildings of the same period, and one that descended to the mediæval churches, becoming in them a source of great external beauty—the portico of Imperial and Christian Roman architecture which became the porch of mediæval.

It is a question whether the Christian basilica was in a manner developed from the Roman dwelling house, in which at an early time the faithful were accustomed to assemble, or whether it followed the public basilica or hall of justice. Whatever the truth may be in regard to this much vexed question, the fact remains that the fore-court or atrium of a Roman house, open to the sky in the middle and surrounded by a covered passageway the inner side of which consisted of a row of columns, the outer of a wall—the fact remains that the atrium, and the public place in front of a public basilica, often surrounded on all four sides by columns and a covered passage, were to every intent and purpose identical. The matter of size does not constitute a real difference.

The atrium was an unfailing feature of the early Christian basilica, a well-preserved example of which is that of St. Clement (Fig. 46) in Rome. Later, the atrium, either because it occupied too much valuable ground, or space for it could not be had, or because its use had lapsed, was removed or not erected at all. In either case the covered passageway, that side of the atrium which was against the church itself, was preserved. It was called the narthex. There is no better example than St. Paul's (Fig. 47), which is closely akin in position and construction to the portico of Roman times, that of the Pantheon (Fig. 11) for instance, and the forebear of the glorious porches of the mediæval cathedrals.

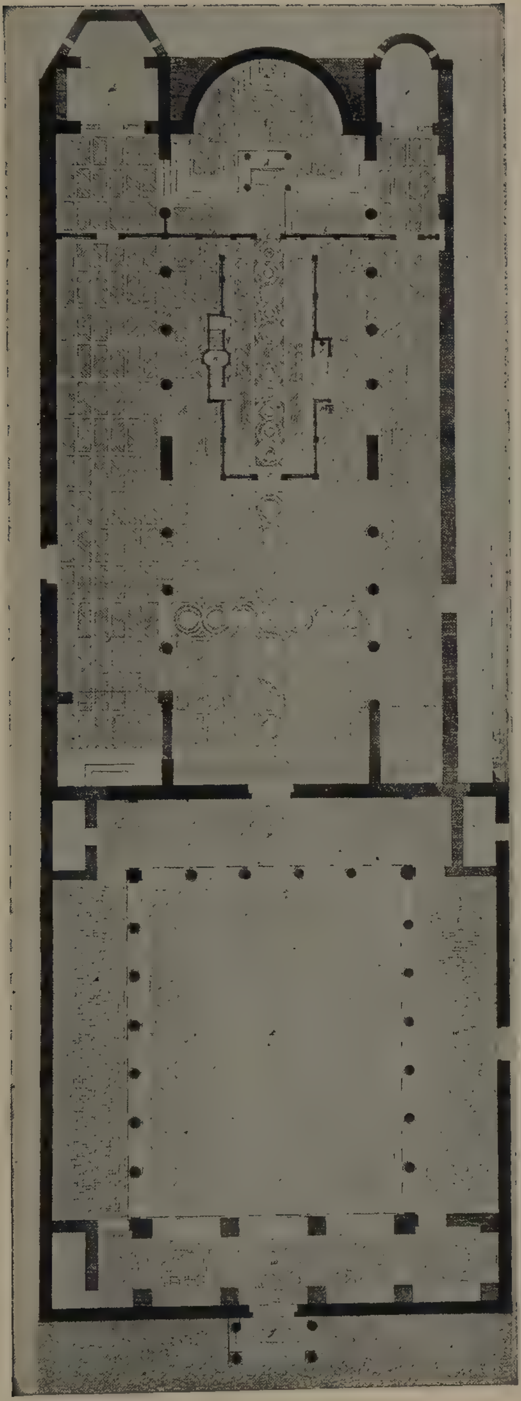

FIG. 46. ST. CLEMENT'S. PLAN

CHAPTER V

CHRISTIAN ROMAN SCULPTURE, PAINTING AND MOSAIC

The sculpture and mural decorations—mosaic and painting—that have come down from the fourth, fifth and sixth centuries of Christian Roman art, show the same Imperial Roman source as the architecture, and the same gradual deterioration due to the same general causes. In pagan times, and in early Christian, the worshipers of Jupiter and the followers of Christ were accustomed to fresco the walls of the catacombs with pictures, symbolic or realistic. The subjects, the symbols, even the technical methods of the former time, were taken over bodily by the latter. Huxley once expressed all this in the clearest possible manner in a letter: "I begin to understand old Rome pretty well, and I am quite learned in the catacombs, which suit me as a kind of Christian fossils out of which one can reconstruct the body of the primitive church."

The walls of churches, and especially the half-domes over apses (the apse of the Christian basilica continued to be vaulted) together with the great arch, and the wall above the arch, which formed the end of the nave where it opened into the apse of a basilica, were usually decorated with mosaic.

Early Christian art, fresco and mosaic alike, possessed no attributes that were not inherited from classical Roman times. Its history is the story of these attributes, one after another misunderstood, neglected, lost, until in the end there came to be scarcely more than a brightly colored wall-decoration, poorly conceived, badly composed and childishly executed. In subject these things grew more and more Christian, less and less classical. While beyond doubt ornamental and gorgeous effect was consciously aimed at, the didactic or instructive character of the subject came early to be regarded as chiefly important.

In the chapel dedicated as a memorial to Constantia, daughter of Constantine, who died in 354 A. D., the mosaic of the gallery vault represents the vintage season in the vineyard. Winged genii gather the fruit, and tread the press. Birds, and a figure of Psyche are set side by side with the lamb and the cross. Roman pagan and Roman Christian were not at this time strange bedfellows. But by 450 A. D. when a dignitary of the church was consulted about the subject for a mural decoration, he ordered pictures from the Bible. From the fifth century on, this was almost wholly the case. At the opening of the eighth century Pope Gregory the Second (St. Gregory) set forth with unmistakable clearness the didactic Christian uses of Biblical subjects. He said, "Painting is employed

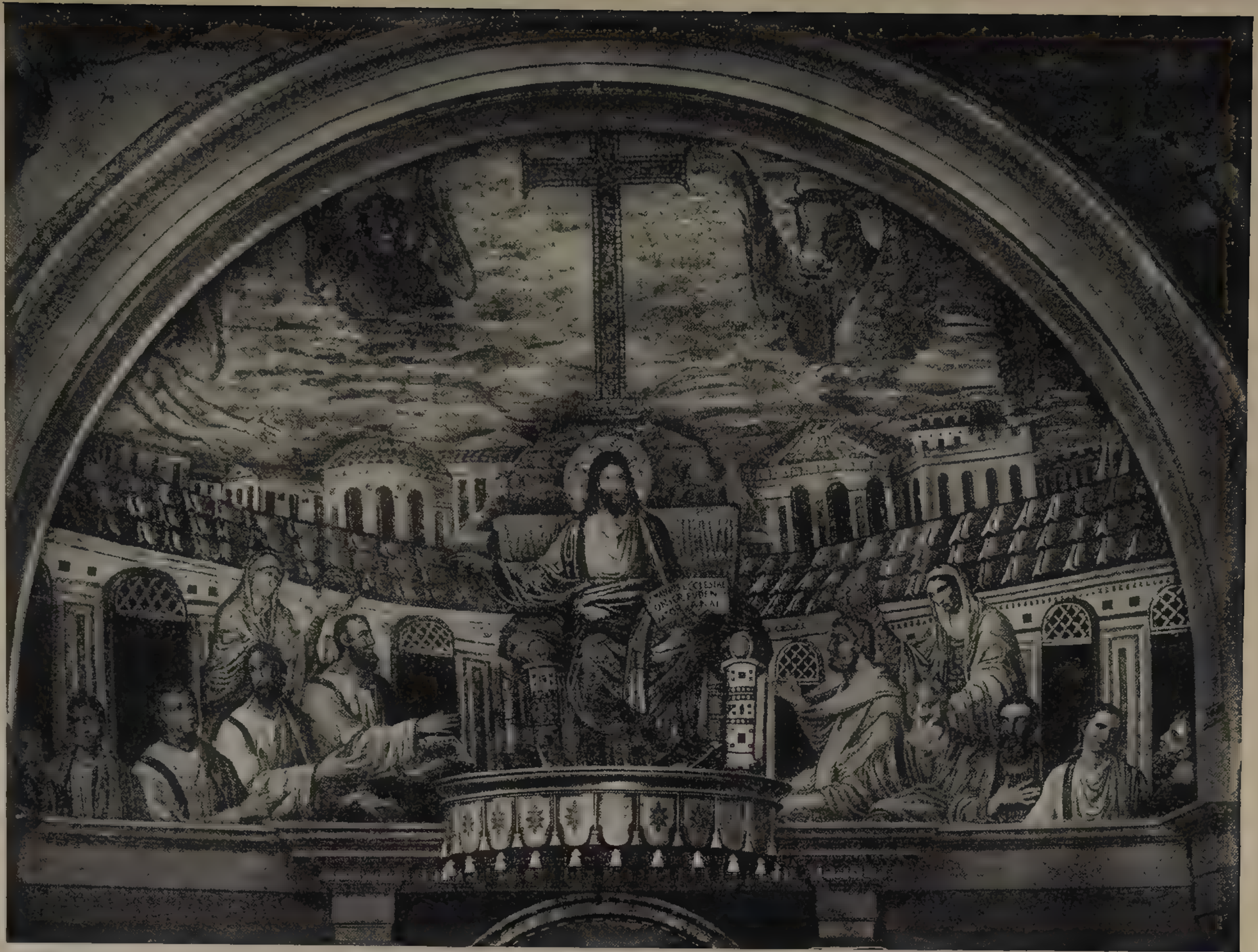

Fig. 48. Mosaic of the Apse of S. Prudentiana

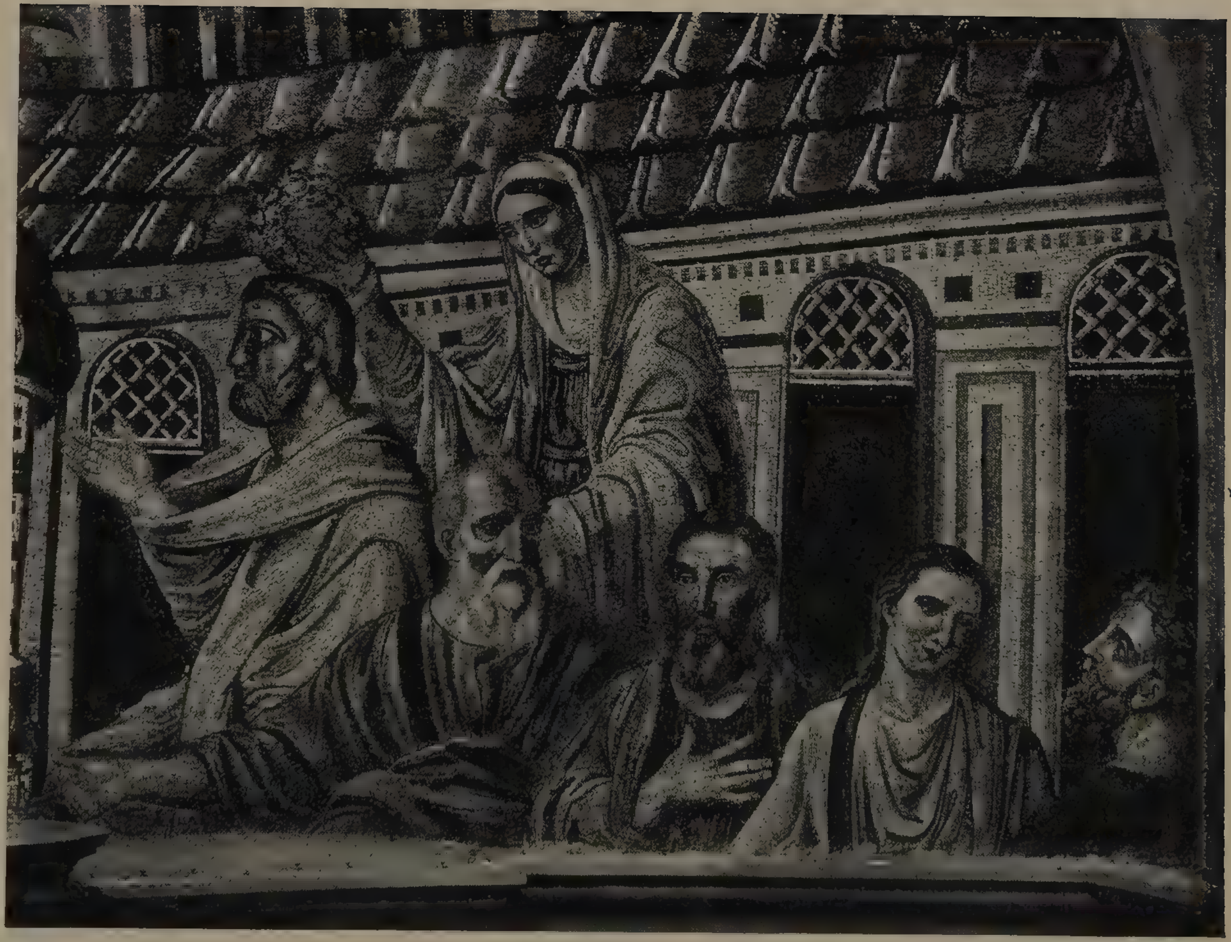

FIG. 49. DETAIL FROM MOSAIC OF THE APSE OF S. PRUDENTIANA

in churches for this reason, that those who are ignorant of the Scriptures may at least see on the walls what they are unable to read in books."

The mosaic of the apse of S. Prudentiana in Rome (Fig. 48) is one of the finest of the early Christian mosaics. It dates from the end of the fourth century, and is an object of monumental dignity as well as beauty. In the terms of nature it makes a deep and enduring appeal to the eye and the heart. The symmetry and balance of good design are strictly maintained in every part, and not less strictly regarded is variety in every detail. While there is much of classical antiquity in the treatment of this subject the subject itself is profoundly Christian. The evidently rapt attention of the apostles to Christ's exposition of the Word, which He holds in His left hand; the grandeur and simplicity of His face and gesture in His effort to be plain in what He is saying; the thoughtful individuality of the listeners (Fig. 49); the personal turn of head, stoop of shoulders, lift or droop of eye—all these are precious qualities of great art when, as here, they are subjected to the laws of design. Behind the throne and higher than the surrounding roofs, rises the Hill of the Lord from which a jeweled cross reaches to the zenith. In the sky on either hand are the fabulous creatures which symbolize the evangelists.

In this mosaic of S. Prudentiana the natural and the supernatural are shown. Things present and things to come are declared. It served the ends of inspiration, instruction and decoration. Among the graphic arts it stands far higher as a matter of adequate accomplishment than the basilica to which it belongs, or even the finest basilica of the age. It, and the best of similar things of the same epoch, attained that high level of excellence which in Rome lapsed, architecturally, more than half a century earlier.

CHAPTER VI

BYZANTINE ARCHITECTURE

The city of Byzantium, the present Constantinople, was an ancient Greek colony. Owing to its geographical location it soon attained commercial eminence. Its Greek origin assured it artistic ideals. From early times Byzantium had intercourse with the Orient and was really the "Gate of the East." To her quays were brought, and in her marts were sold, all the rich and beautiful works of oriental art—weaves, and inlays, and pottery. In this city there existed a remarkable condition of affairs so far as plastic and graphic arts were concerned. Its citizens were a people trained by experience and addicted naturally to being logical in their ways of thinking and expression; in other words, Greek—men whose passion was for making the necessary and useful lovely, but never lovely, or even merely ornamental, at the expense of what was reasonable.

Oriental art, architecture, sculpture and painting, past and present, seems to have been guided and inspired by a very different spirit—by a passionate love of beauty, but, to say the least, undominated by any marked regard for reason in architectural construction, or any strong bent for naturalistic representation in sculpture and painting. Gorgeousness of coloring, intricacy as well as simplicity of noble design—either geometrical or highly formal—together with elaborate color and surface carving, incised or in low relief, are to-day, as in the remote past, characteristic of the oriental arts—Chinese, Indian, Assyrian, Persian. In Byzantium oriental artistic influences surrounded a people of Greek origin, imbued with a wonderful regard for order in design, a strong liking for naturalistic representation, and a passion for common sense in construction.

During the course of years, at the opening of the third century of the Christian era, at a time when these tendencies and influences must have become thoroughly amalgamated, an art—Byzantine—had come into being, born, as a child, of two widely different parents, and possessed in no small degree of the traits of each. At this time Byzantium, a dependency of Imperial Rome, was itself made the capital of the Empire.

Like other dependencies of that colossal power, Byzantium, in her days of dependence, remained at one and the same time free and subject. Rome was the capital of the world. She set all fashions and her provinces, in a spirit of policy or pride, sought to follow. This was noticeably true of the plastic and graphic arts which have left as proof so many baths, theaters and temples, scattered all over Europe, from the English Channel to the Dardanelles, from Africa to Denmark —buildings which, in point of construction and decoration, might have been for the most part erected in Rome itself. These orientalized Greeks of Byzantium, if they may be so designated, were eventually Romanized in an incomplete way.

Between 500 B. C. and 300 A. D. three characteristics of the greatest art were brought together and mingled in Byzantium: reason with a passion for nature, i. e., Greek; conventionalism, with a passion for design, i. e., Oriental; practicality, with a passion for gigantic accomplishment, i. e., Roman. Finally the people by whom these characteristics were mingled were those to whom Constantine bore the Eagles; among whom he established the imperial throne; whose city he gave his own name and made the capital of the Eastern Empire, at the time when the Empire of Rome was falling. Wealth, and peace, and power, all at once were present in a city and a territory where also were to be found the most remarkable skill of hand, power of imagination, and knowledge of the laws of building construction. No wonder then if we find the beauty of Greece and the grandeur of Rome combined with oriental splendor and elaboration in a single work of Byzantine art, the church of Santa Sophia (Holy Wisdom) built between 532 and 562 by the Emperor Justinian, under whom the Byzantine or Eastern Roman Empire attained its meridian power. The term Byzantine art strictly interpreted means the art of Eastern Christendom from Constantine's establishment of the capital, and naming it, until its subjugation by the Turks in 1453. As commonly used Byzantine applies to the art that has had its chief inspiration in Byzantine work, for example, Russian art.

There is little doubt that the tradition of architectural magnificence down to Constantine's time centered about the vast vaulted structures of Rome—particularly about such a gigantic domed edifice as the Pantheon. It was natural that such tradition should maintain itself long after the fall of Rome, and that it should have been transplanted to the capital on the Bosphorus, and persisted there. At all events Justinian's splendid church is a building vaulted with a hemispherical dome one hundred and six feet in span, its crown one hundred and eighty feet above the pavement.

The remarkable peculiarity of this dome (Fig. 50), as the plan shows, is its construction over a square compartment. In Roman architecture the presence of a hemispherical dome always implied a circular vaulting compartment, enclosed by a circular wall of great thickness, for support and abutment (Fig. 13). No plan other than round, and no wall other than circular and massive would do.

In Santa Sophia four piers, one each at the four angles of a central square compartment (Fig. 50), support a hemispherical dome securely and gracefully. Here is a great change, a notable lessening of restrictions in the design and plan of buildings on the part of sixth century Byzantine architects as compared with Roman architects under the Empire.

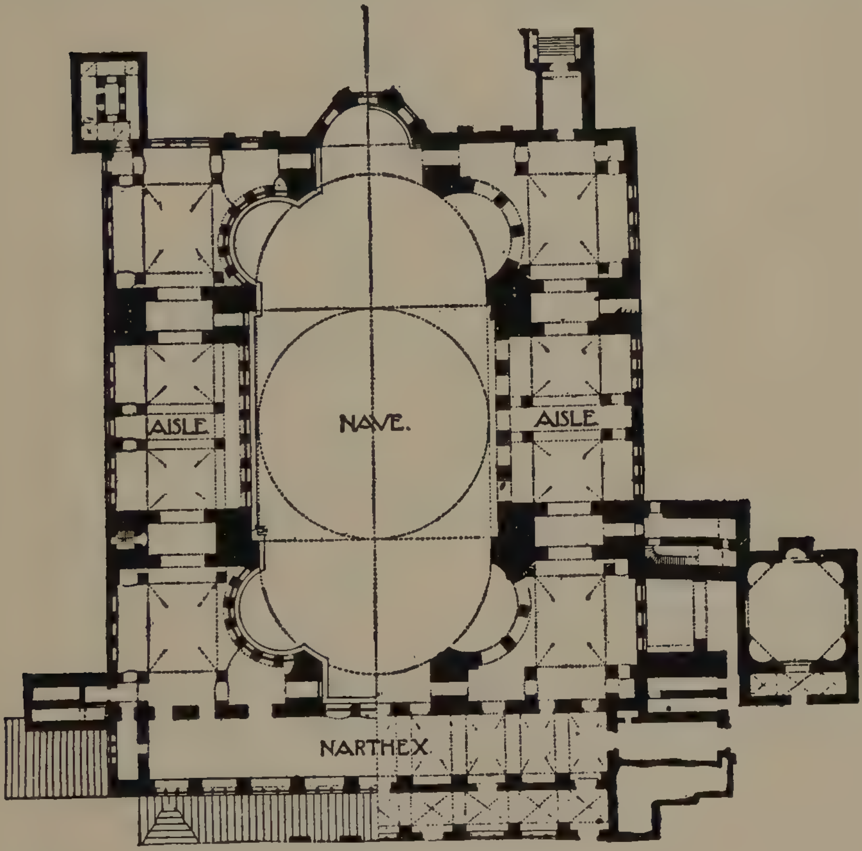

FIG. 50. S. SOPHIA. PLAN

The Byzantine architects made logical, perfected, and then constructed on a vast scale a common but never wholly satisfactory oriental contrivance for placing domes over rectangular compartments. They probably got their idea from certain small buildings of the East, notably Palestine, in which pendentives—the all-essential and characteristic feature of Byzantine construction—were used long before Santa Sophia was thought of. In modifying the squinch and in applying the pendentive on a grand scale the Byzantines showed their essential likeness to the Greeks; their power to give an imperfect and never beautiful, but long known architectural contrivance the form perfectly suited to its functions, and to endow that form with beauty. This is an act wholly in keeping with the Greek genius of the great age—not so much a genius for inventing new forms of art as for taking those already invented and in use, and changing them (adding something or taking something away) until the form perfectly satisfies the need which gives rise to it.

The constructive invention, the architectural member referred to as used by the oriental peoples for supporting a dome over a square compartment, is called a squinch. It is a bracket built into or across the angle of a rectangular compartment. Obviously four such brackets, built, one each, into or across the four angles

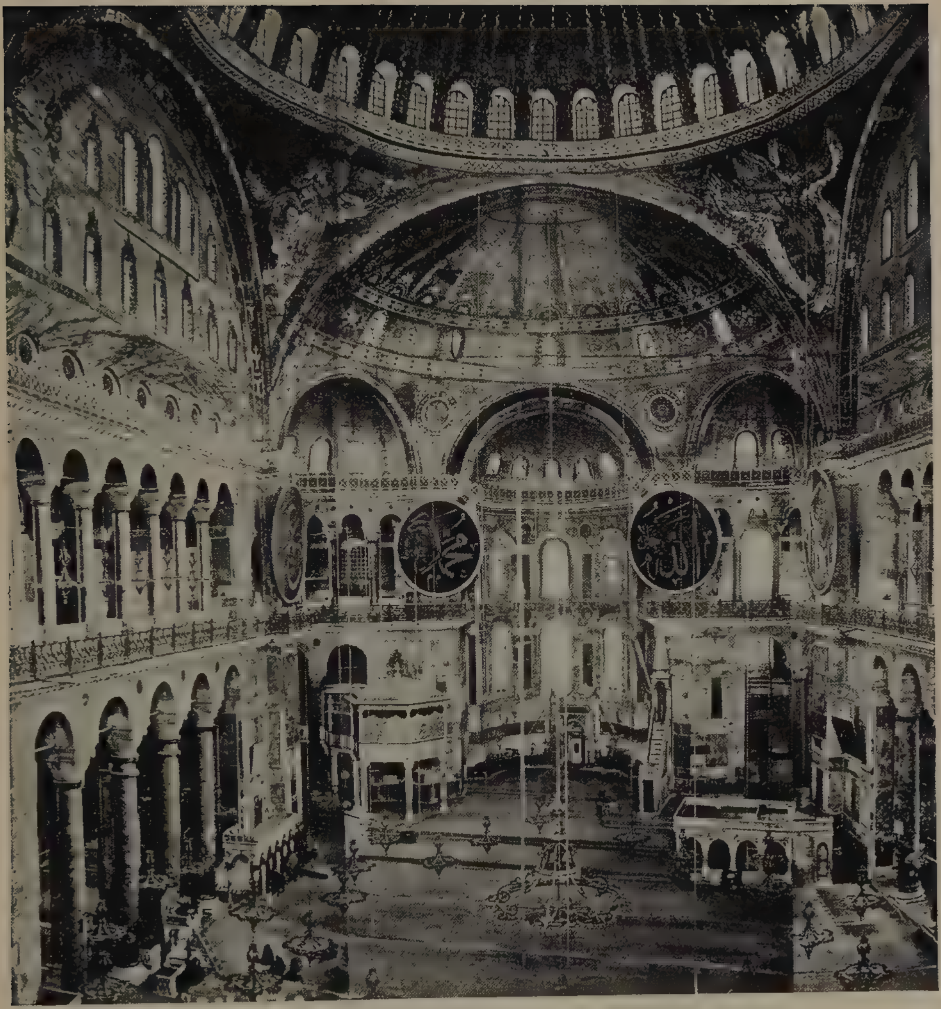

FIG. 51. S. SOPHIA. INTERIOR

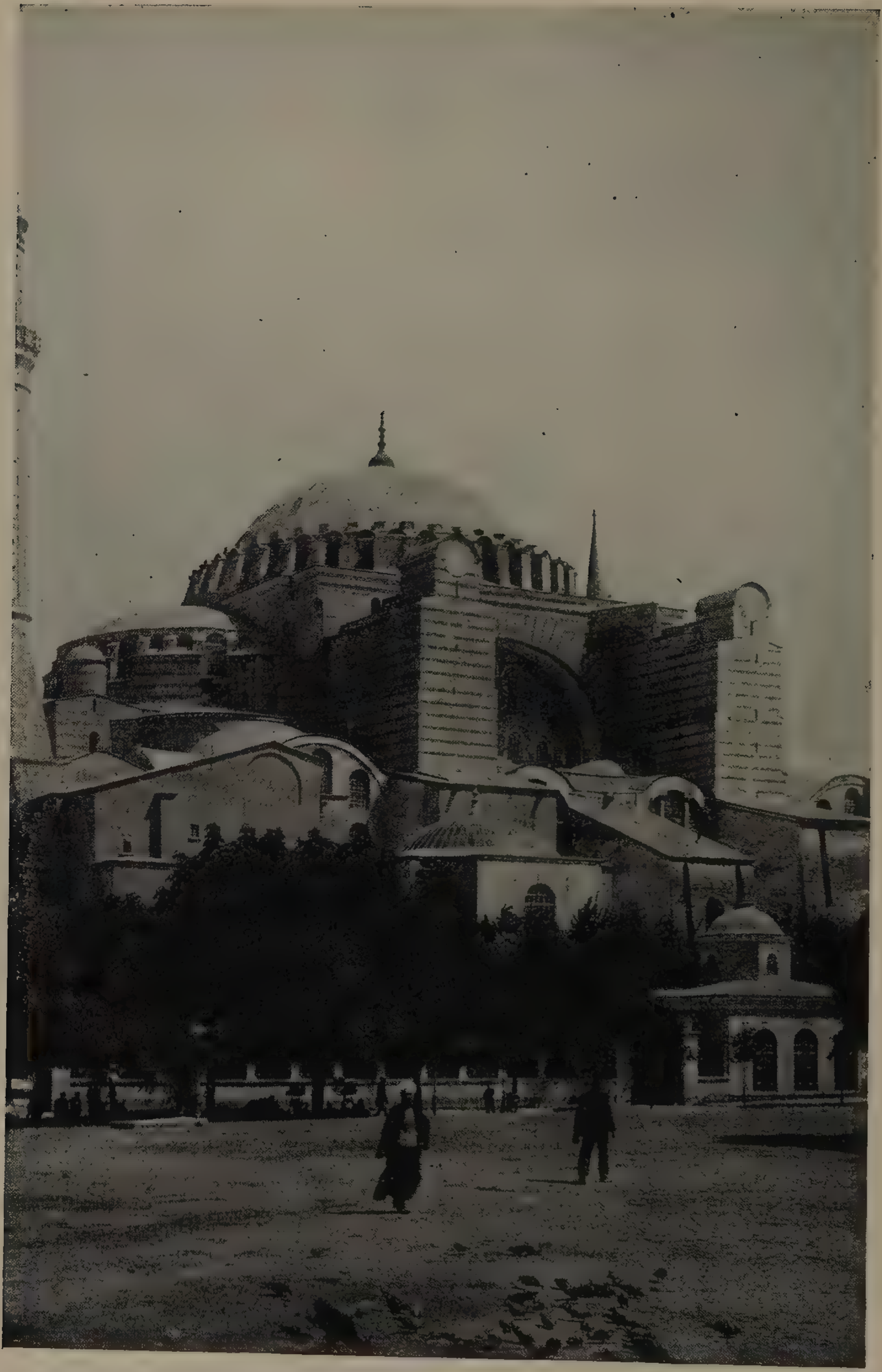

FIG. 52. S. SOPHIA. GENERAL VIEW

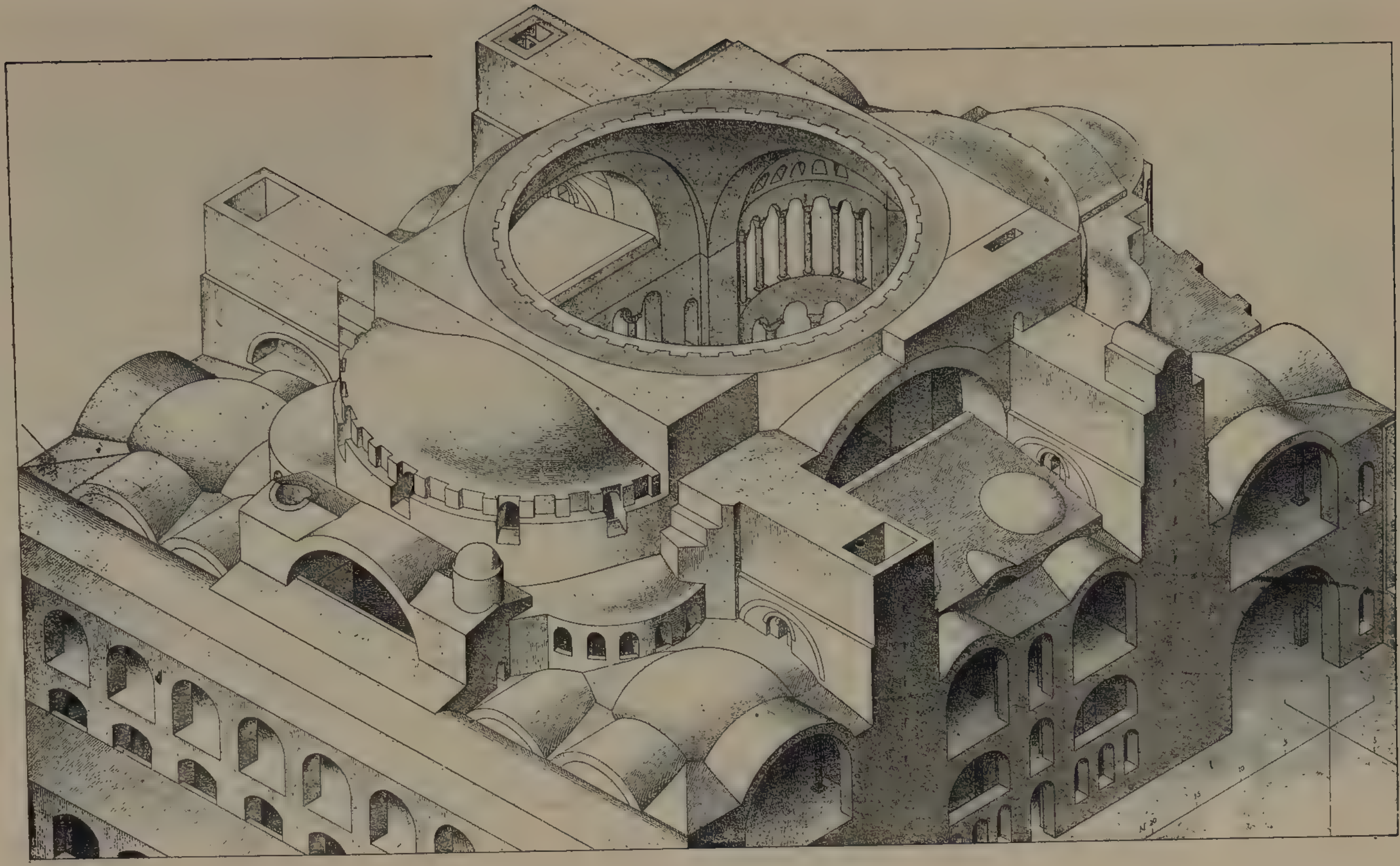

FIG. 53.

S. SOPHIA. CONSTRUCTION

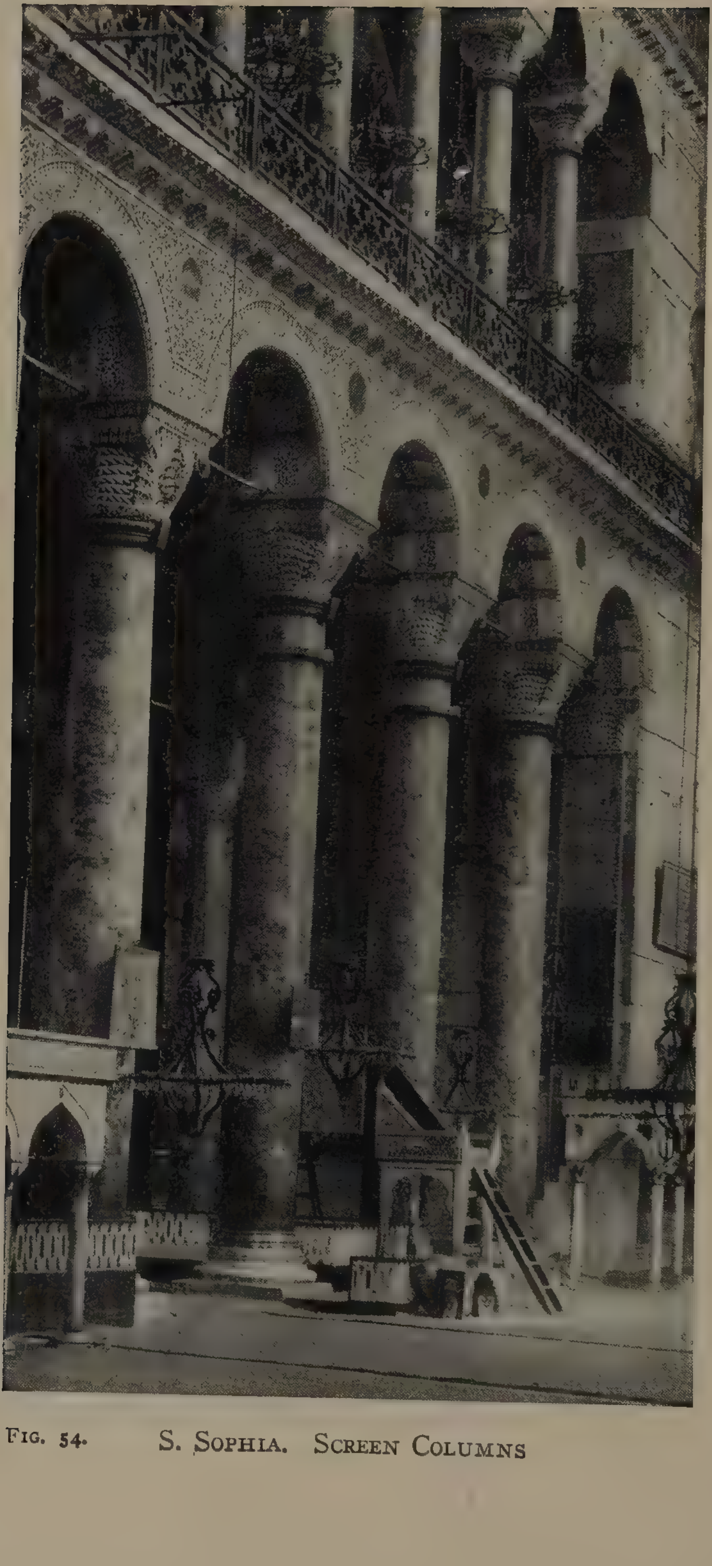

FIG. 54. S. SOPHIA. SCREEN COLUMNS

of the top of a rectangular, let us say a square compartment, will change that compartment to an octagon at the top. It is further obvious that the circular base of a dome will fit, though not with absolute precision, and find partial support on this octagonal foundation when such a dome would not fit or find support on a square foundation. It was this squinch, an imperfect but highly serviceable contrivance in dome building, invented in the East, that the Byzantine architects of the sixth century used as the basis of a construction whereby a square compartment could be transformed into a perfect circle at its summit. It is clear that the circular base of a hemispherical dome will fit perfectly, and find perfect support, on a circular foundation. The name of this Byzantine device which revolutionized the methods of supporting large domes is "pendentive."

The pendentive is a bracket of masonry built into or across the angle of a square compartment. It has the form of a concave spherical triangle, beginning at a point low down in the angle of the compartment and increasing, sweeping upward and outward, until it describes a quarter circle at the summit. Four such pendentives, one each in the four angles of a square compartment, will meet in a circle at the top, upon which circle, as base, it is an easy matter to construct a hemispherical dome.

Santa Sophia is built on a tremendous scale. The central dome rests on four pendentives (Fig. 51) which spring from four great piers, one each at the angles of the central square compartment of the building. The curve of this dome is considerably less than a semicircle (Fig. 52), i. e., flattened, the diameter being one hundred and six feet and the height forty-six feet. The four arches, really the vertical bounding curves of the pendentives which fill in the sides of the square, above which the dome rests, carry walls of considerable thickness, as the exterior view of the church shows. Thus each pendentive is (Fig. 53), as it were, fitted into the angle of a huge, square, stone box, the space behind the pendentive, and within the angle walls of this box being one mass of solid masonry, capable, like the walls, of carrying weight and overcoming thrust. In the next place the four enormous piers (Fig. 50), each about twenty-five feet square, from which the pendentives spring, are really giant abutments, fully capable, along with the arches and walls already mentioned—the pendentives and the superstructure which connects them—of overcoming the thrust, as well as supporting the weight of the dome. Finally the base of the dome (Fig. 51) is pierced by a continuous row of windows which diminish its weight, as does also the fact that the entire structure is built of a light stone. On opposite sides of the central dome, to the west and east, are half-domes, equal in diameter to the central dome, but arranged at a lower level. These in turn are abutted by massive piers, and carried on pendentives, the principle being the same as that just described, and clearly to be made out from the interior view of the church. More, and smaller, half-domes are similarly set against the two main half-domes.

In Santa Sophia the rectangular plan (Fig. 50) of the building is brought about by walling in the spaces between the great abutments on north and south, and the four reentrant angles made by these abutments with the lesser abutments which carry and stay the half-domes to east and west. The six compartments thus formed, three on either side of the nave, are covered with intersecting vaults somewhat resembling Roman ellipitical groin vaults.

The lofty arches between the piers and under the pendentives, to the north and south, beneath the central dome (Fig. 51), are filled with screens of stone and marble—wonderful pieces of design, as well as serviceable features of construction, which materially strengthen and stiffen the building. The corresponding great arches beneath the central dome to east and west, facing into the spaces under the half-domes, are open. This arrangement gives the church a nave two hundred and thirty feet long by a hundred wide. There is no other building which possesses an absolutely unbroken floor area of equal dimensions. The nave terminates in the usual apse. The actual size of this building, in reality enormous, is in appearance much increased by the pendentives and half-domes, larger and smaller, which lead the eye by degrees from one concave surface to another, until it comes to rest at the crown of the central dome. It is visible from almost every possible view-point. In this regard the interior of Santa Sophia is a miracle of design.[13]

The details of the building are as fine as the architectural masses of its composition are imposing. The two lateral screens, already referred to, beneath the great dome, are very substantial constructions of columns and arches. Each is divided into three stories, a lower and an upper arcade, through which one looks into the aisles, and the galleries over the aisles. Above these arcades is a wall, in which, in ascending order, come a series of small blind arches and then two tiers of clerestory windows. These screens, in the careful proportioning of all their parts, height of column and breadth of space, together with the wholly unusual method of placing more columns in the upper tier than in the lower, thus doing away with every vestige of classical procedure, are unique.

Further, in the carefully thought-out distribution of the stories, and their details, they offer one of the finest illustrations of scale—that quality by which things of great size are made to appear as large as they really are—to be found in all architecture. The ground story arcade is made up of columns (Fig. 54) each about thirty feet high. Above the arches which connect these columns the wall is finished with a projecting cornice. This cornice is almost as unlike any classical cornice—Greek or Roman—as the arches that span the spaces between the columns are unlike lintels. Upon closer examination of these screens, the capitals of the columns will be found to differ as much from the type form of Corinthian capital (Fig. 38), with its leaf and flower ornament carved in high relief upon a concave block, as the cornices differ from classical Roman cornices (Fig. 12), or the arch on columns, from the lintel on columns. In place of the undercut, graceful bell, and thin-lipped abacus of the Corinthian capital, with its frail projecting leaves, lilies and volutes, the Byzantine architects substituted a very heavy, chamfered, or convex block, with surface, or very slightly projecting ornament—a form of capital not undercut or graceful, but capable of supporting the broad and heavy impost of arch construction, with the weight of superimposed walls. The Corinthian capital of classical architecture was suited for the support of lintels (members exerting vertical weight only) which were not likely to break the projecting stone lip at the top of the capital, especially as they were usually set well within the bounding lines of that lip. When, however, the Byzantine builders began to make columns support arches, they at once, and with fine logic, undertook to provide a capital that should offer as much bearing surface as possible, and at the same time do away with all fragile or projecting parts—such as the lips or projections of the Corinthian—which might easily give way, or crack, beneath the thrust and weight of arches. The capitals of the Santa Sophia screens offer an illustration in point. So likewise do the Byzantine capitals of the cubical type in St. Mark's, Venice (Fig. 55).

Finer ornament does not exist in architecture than that on the spandrils (the triangular space between adjacent arches), and on the higher wall surfaces of these screens (Fig. 54). The designs, foliate for the most part, are worked out in surface inlays of different colored stone. The variety and grace of line in the composition is everywhere full of life, while the elaborate abundance of detail is always orderly. The refinement and vitality of this design is characteristic of the best Greek work. The elaborate abundance, the sumptuous nature of the materials used, and sur-

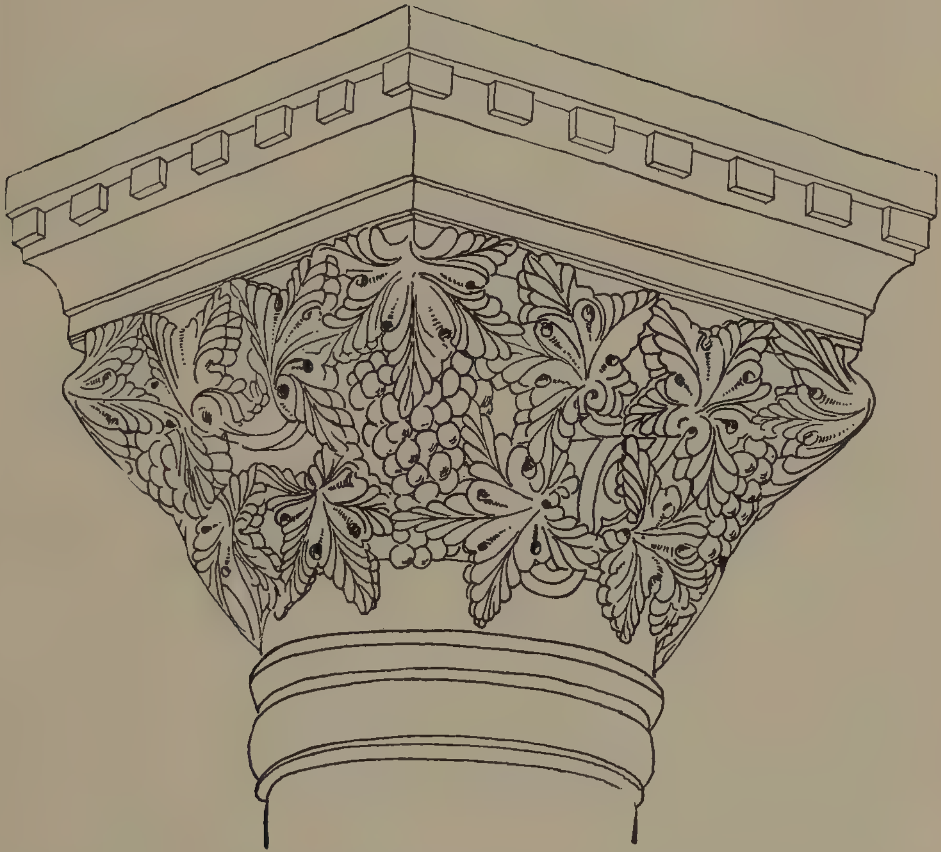

FIG. 55. ST. MARK'S, VENICE. A CAPITAL

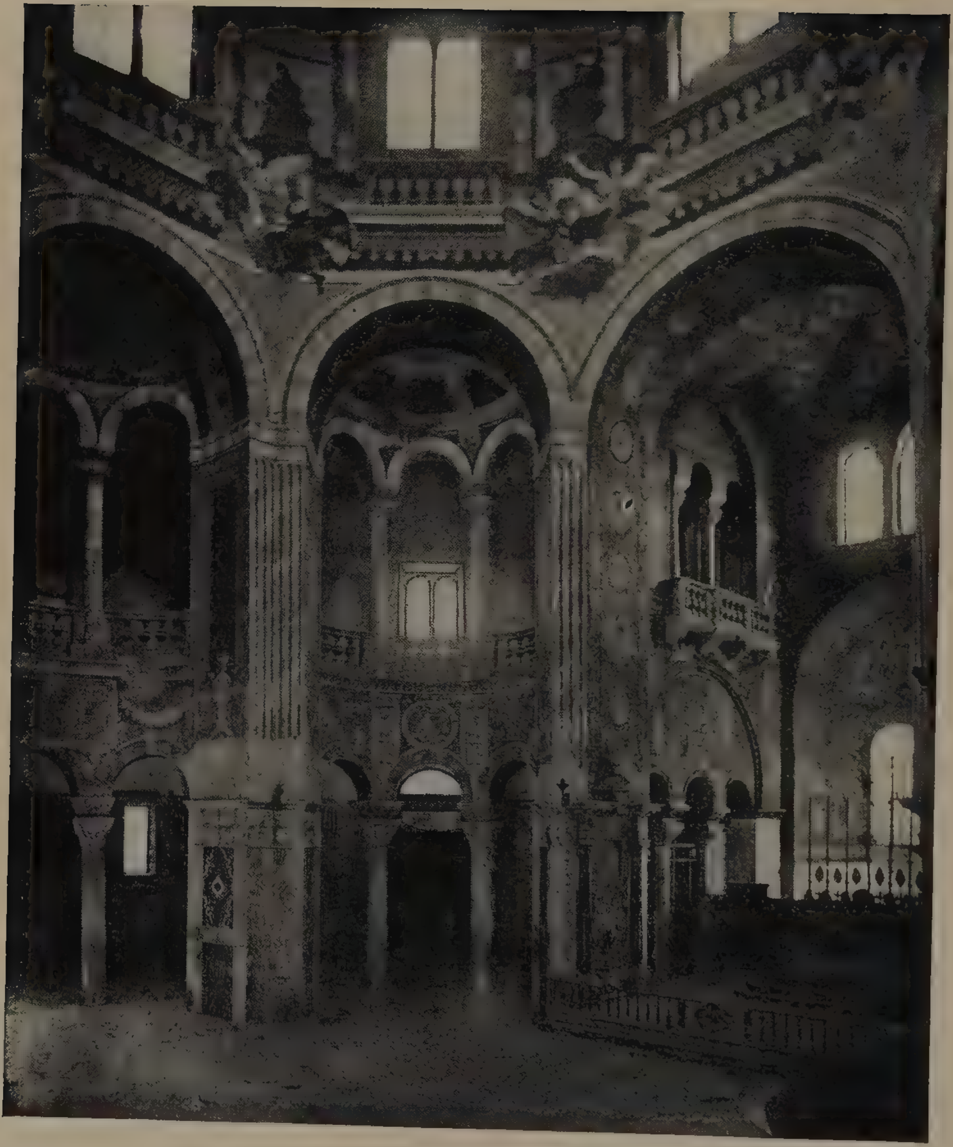

Fig. 56.

S. Vitale. Interior

face quality of it are oriental. The imposing dimensions are Roman. But these screens, like the church itself, are neither Greek, nor oriental, nor Roman. They are a blend of all three, unique and individual, forming a new and perfect harmony. The old art, Greek and Roman, had passed away, while a new art —practical and beautiful, in decoration and construction—had been born. That new art was Byzantine.

Externally, Byzantine architecture in the East produced little that was remarkable save for size. Viewed from the outside (Fig. 52), Santa Sophia has the fault common to many early Christian buildings, that of ugliness, which frequently can not even claim to be interesting. Some of the early Christian basilicas, such for example as St. Paul's in Rome (Fig. 41), would have offered notable exceptions with their rich colonnades and mosaic-encrusted façades. However, little more can be said of the exterior of Santa Sophia than that it is a vast and in no sense graceful pile of masonry, lacking salient features and beauty of form. Even the great dome is not striking—striking as are the domes of St. Peter's in Rome, St. Paul's in London, or the capitol in Washington; domes that dominate all about them, and form the centers of architectural interest even in the greatest cities.

From the modern point of view the invention and development of the dome were Roman. The freeing of architects and builders from the necessity of always placing domes over circular compartments was Byzantine. To raise domes high in air and make them splendid external features of architecture remained for the Renaissance, although the first step in this direction was taken by the Byzantine builders of the age of Justinian when they began to interpose a low wall, or drum, between the circular base, formed by the pendentives, and the circular impost of the dome itself. However, one point of difference between all Roman and Byzantine domes, and the domes of the Renaissance, should never be lost sight of, namely, in Roman and Byzantine buildings, such as the Pantheon and Santa Sophia, the dome that one sees inside is the same that is seen from the outside. The dome or vault is the true roof. In Renaissance buildings, on the other hand, such as St. Paul's in London, the dome seen inside is one and that seen from without is another, an enormous space intervening between the two.

Thus far the main tendencies and leading characteristics of Greek and Roman classical art have been considered together with those of Christian Roman art and Byzantine art in the Eastern Empire. We have tried to show briefly what were the chief sources from which these tendencies came, and what were the characteristics of that Byzantine art which was produced by their intermingling in a region where there were strong oriental influences. We must now turn our thoughts to the influence which Byzantine art had in North Italy, and especially in Ravenna, the capital of the Gothic kingdom during the sixth century, throughout the reign of the great Goth, Theodoric, and after his death on to the end of the century, during which time Theodoric's kingdom and its capital became the "exarchate of Ravenna"—a province subject to the Emperor at Constantinople.

In the first place Ravenna held, like all other places in Italy, the tradition of the Roman Empire in profound respect. Moreover, she inherited much, in letters and in art alike, from the former rulers and civilizers of Italy, the Roman masters of the world. Later she inherited from the Christian Romans. Christianity flourished in Ravenna during the fifth and sixth centuries, and Ravenna was the stage on which a great part of the struggle between the orthodox believers and the Arians took place, marks of which struggle are strangely present to this day in the architecture of that wonderful dead city. Ravenna was the last place in Italy to lose its hold on the arts of the former time, and one of the places, probably the chief place, in which the last and latest light of classical culture shone, and where it faded into the twilight of the so-called Dark Ages.

In the second place Ravenna, because of her fine harbor, became the important Italian port of entry for Byzantine trade, and from this came her mercantile importance, and her wealth. Unlike the cities nearer Rome she did not for a long time feel the depressing, and finally paralyzing effect of the removal of the seat of government to the East, nor was she much affected by the fall of Rome. Her connection with Constantinople made her great and brought about her ruin. Theodoric the Goth, who ultimately made himself king of Italy, while a hostage at Constantinople had imbibed the ideals of Byzantine culture and art. But this never blinded him to the greatness of the Roman Empire, or made him unheedful of what that greatness stood for in the popular mind. In Ravenna, so to speak, Rome and Constantinople met; imperial, Christian, Greek and oriental influences commingled; the art that expressed these influences, markedly Byzantine, less noticeably Roman, and wholly Christian, exhibits the character of each, modified by a crudity of conception and technique, necessarily found in the arts of a place remote from the centers of influence, yet overflowing with its own vitality. The same condition prevailed subsequent to Theodoric's death (526 A. D.), and on to the death of Justinian (565 A. D.), after which the power of the Eastern Empire began to wane, and the history of the decline of the Roman Empire was repeated, the farthest provinces being first disregarded. Next the barbarians began to press on the frontiers of the Gothic kingdom, as other barbarians had earlier on the frontiers of the Roman Empire, and finally on Rome. So, in the end, the Huns brought about the complete degradation of the Gothic Kingdom and its capital, Ravenna. With the Huns came also from the North hordes of barbarian Lombards, a reminiscence of whom still survives in the name of Lombardy. For two centuries—from 600 A. D. to 800 A. D.—conditions were more unsettled and the outlook for civilization and the arts gloomier, perhaps, than at any time since the beginning of the Christian era. But what came of this will be told later. Byzantine art in Italy, and at Ravenna in particular, is our present concern.

The chief domed edifice of Ravenna is the remarkable and beautiful octagonal church built by Theodoric, and dedicated to S. Vitale (Fig. 57). The octagonal plan is more Roman than Byzantine, while the dome, and its pendentive supports, are distinctly Byzantine. The circular impost of this dome rests upon a sixteen-sided polygonal foundation, each of the angles of the central octagonal compartment of the building, at the top, being occupied by a small pendentive, thus increasing the width of the walls and making it possible for them to support the circular base of the dome.

In S. Vitale (Fig. 56) a two-storied aisle surrounds the octagonal space beneath the dome, upon

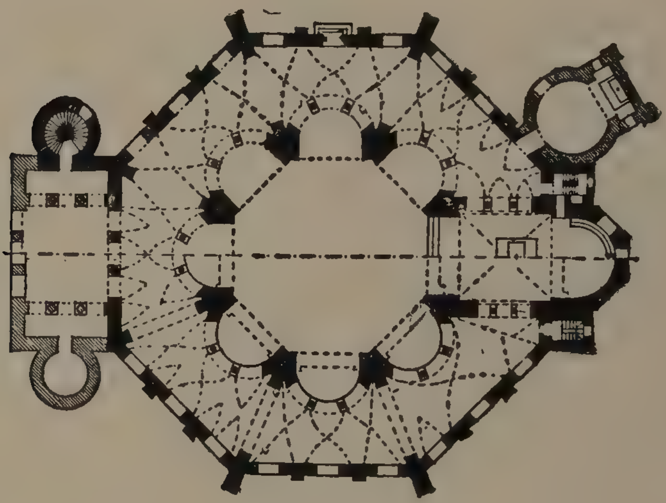

FIG. 57. S. VITALE, PLAN

seven sides, while the eighth, that to the east (Fig. 56), has a rectangular addition which serves for a choir and terminates in an apse.

The capitals of the columns of the surrounding aisle and the aisle-galleries, like those of many other buildings in Ravenna and Constantinople, offer illustration of the way that the Byzantine and Ravennate architects solved the problem of making the thin lip

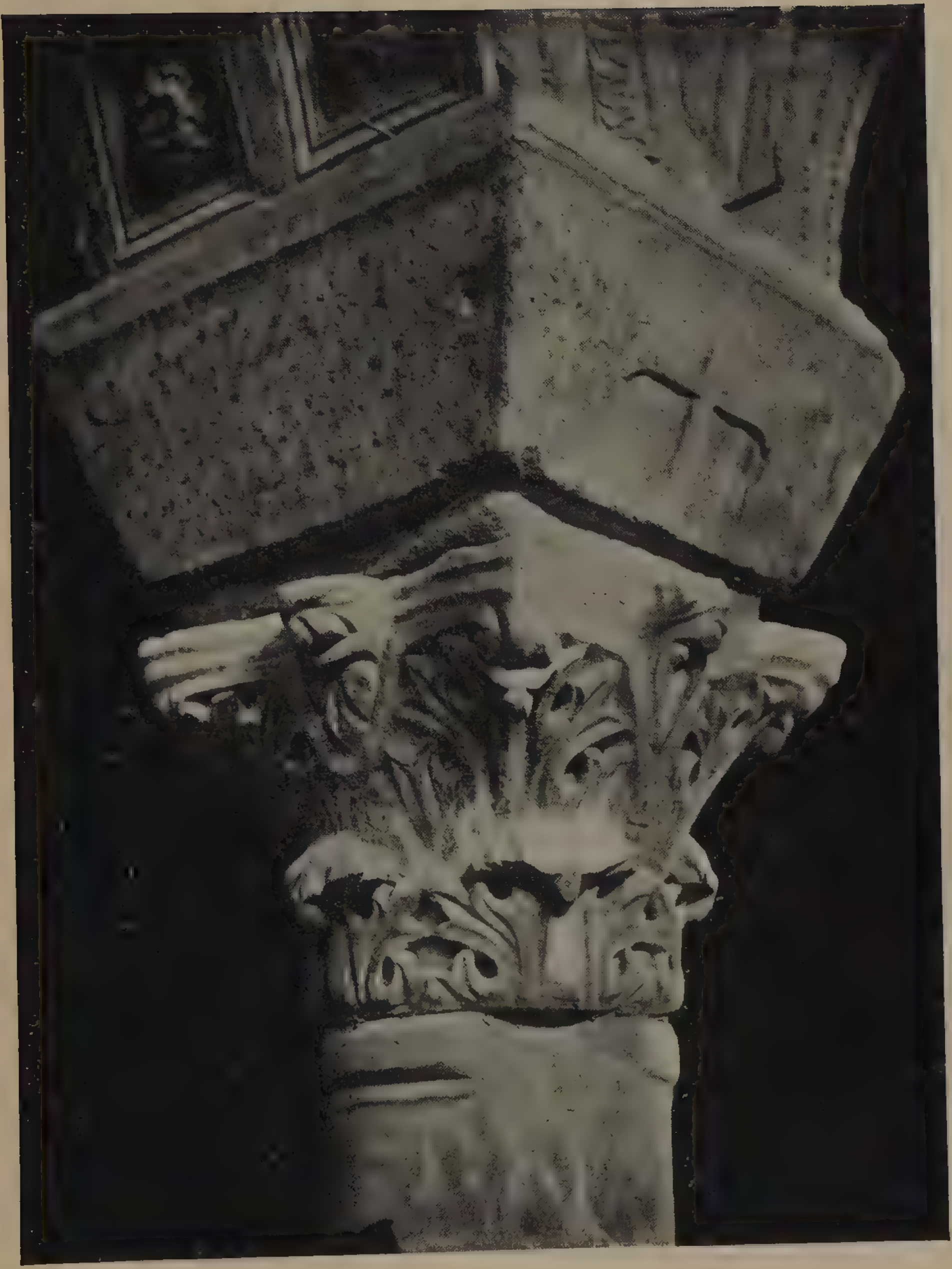

Fig. 58. Capital from Ravenna

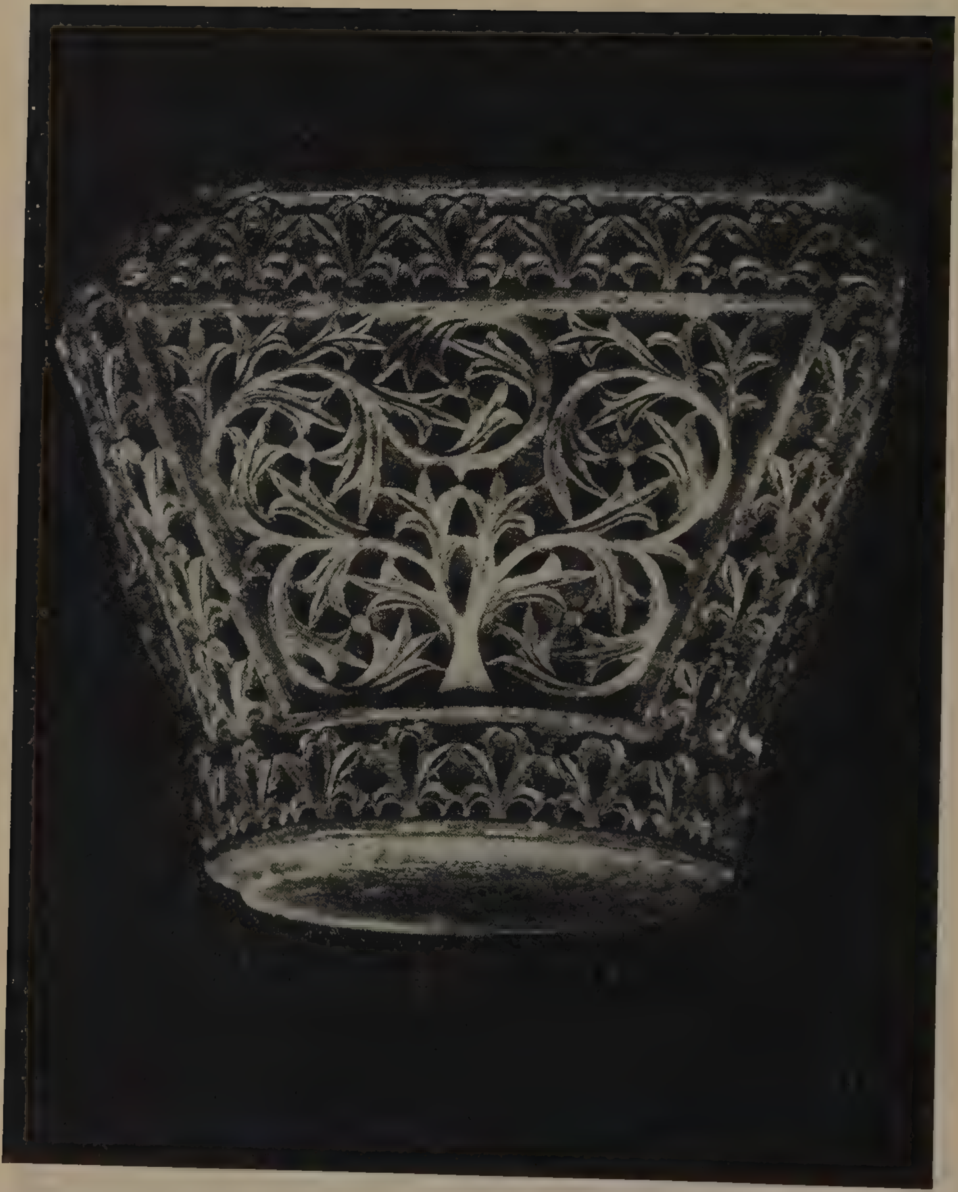

Fig. 59. Cushion Capital

and concave carved sides of the Corinthian capital equal to supporting the heavy construction, and impost of arches (Fig. 58). In most of the Ravennate churches, like most other early mediæval churches, the columns and capitals were actually pilfered from classical buildings. These capitals were for the most part Corinthian. Between the thin lip of the capital and the load of the superimposed arch, the builders placed an "impost block"—a block of stone, square on top, and chamfered to a smaller square or circular base.

A point of great interest in this connection lies in the fact that while the art of that day had lost the technical excellence of the older time, it was atoning by its display of new and reasonable zeal and vigor; by its disregard of precedent, when the conditions to be met by columns and capitals, the support of arches, had come to differ widely from the similar conditions of classical times, the support of lintels. The history and development of this impost block shows it constantly increasing in weight and thickness. Finally, the logical thing happens, and we see the useless and clumsy repetition of one block of similar shape above another, capital and impost block, done away with completely, while the remaining member, the capital, has a cubical form resembling that of the impost block, together with the strength of such a block, undiminished, in reality or seeming, by deeply undercut ornament, like that of the Corinthian capital. The result was what is known as the cubical or cushion capital (Fig. 59), a form of capital wholly new, highly useful, and of great beauty. As the Byzantine architects, practically speaking, gave the pendentive to the architectural world, so also they gave the cubical or cushion capital.

Taken as a whole the church of S. Vitale may be said to show distinctly more Byzantine character, in plan, elevation and detail, than Roman. It is interesting, and very much in keeping with the spirit of sixth and late fifth century Ravenna, to know that basilicas of the Christian Roman type were built at the same time, or very little earlier than S. Vitale. The most important was the church dedicated to S. Apollinare, which is generally thought to have been erected in the year 500. This basilica differs in no important respect from the early Christian basilicas of Rome. Its plan, a long narrow rectangle, is somewhat longer and narrower than in the case of similar Roman buildings. It has a broad nave flanked by single side aisles. The columns, which separate the nave from the aisles, are connected by arches as are those in St. Paul's at Rome (Fig. 41). The nave of S. Apollinare terminates in a semicircular apse which is vaulted with a half-dome. The columns, some of which are antique, have capitals of the usual Corinthian form (Fig. 58), upon which heavy impost blocks support the connecting arches. These arches carry a high wall. In this wall there is a row of clerestory windows.

Among the smaller buildings of Ravenna the tomb of Galla Placidia is both important and beautiful. It is a little structure, in plan an equal armed cross (Fig. 60). The four compartments, the arms of the cross, open, each by a round arch (Fig. 61), upon the central compartment, which is square. The four arms are vaulted, each with a barrel vault. The central square compartment, the walls of which are carried above the level of the crowns of the surrounding barrel vaults, is covered by a portion of a dome; the part remaining after four semicircular arches have been cut into the four cardinal faces of the dome. The form of this vault is that of a concave canopy resting upon four

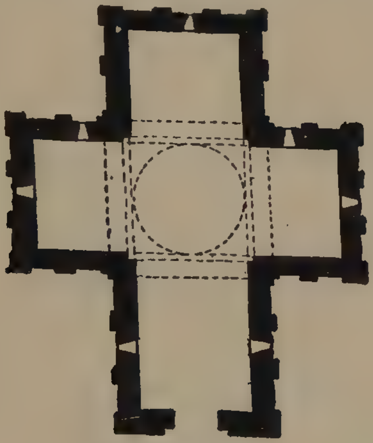

FIG. 60. TOMB OF GALLA PLACIDIA. PLAN

points, which points are the four angles of the square compartment beneath the vault.

The tomb of Galla Placidia, like the other buildings, large and small, in Ravenna, in Constantinople, and, to a great extent, in Christian Rome, was bare of ornament without—a mass of brick and mortar (Fig. 62). Within, it was overlaid with a glorious wealth of design wrought in the most brilliant and concordant colors, the material ranging in value from glass mosaic, and colored stones, to the finest marbles and semi-precious, even precious, stones. In this particular building, the walls, as high as a man's head, are wainscoted with creamy marble, rose and yellow-veined, set in panels, framed with carved marble moldings. Above, the walls and vaults are mosaic; the ground deep blue, on which are figures in white and gray, and foliate designs in predominating deep greens and blues, touched with orange and white, while the high vault is sown with gold stars. What in this respect is true of the tomb of Galla Placidia is equally true of other buildings of the same age, and true most notably of Santa Sophia at Constantinople, where abundant light, pouring through the ring of windows about the base of the central dome, through windows in the lower half-domes and in the high wall of the side screens, bathes such a vast ensemble of design, worked out, harmonious and brilliant, in marble

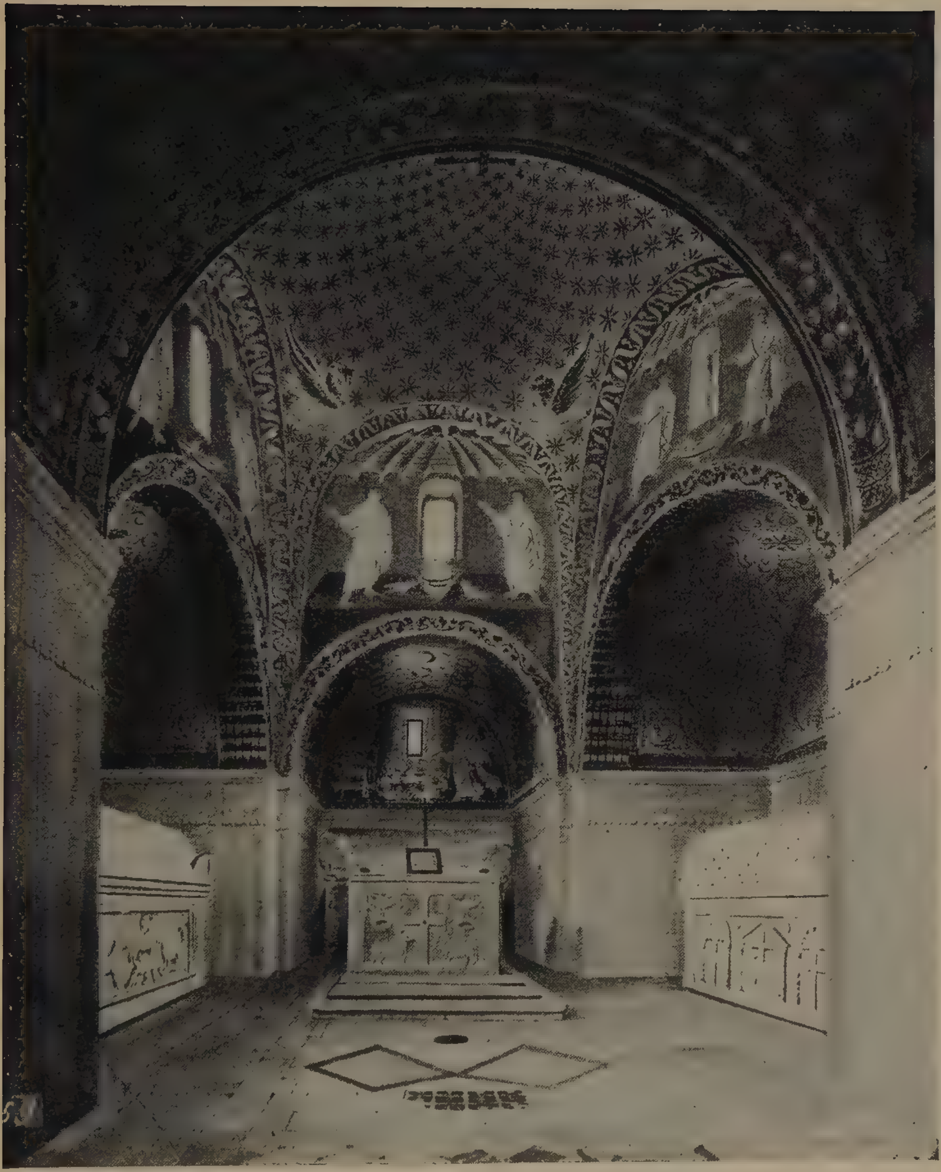

Fig. 61. Tomb of Galla Placidia. Interior

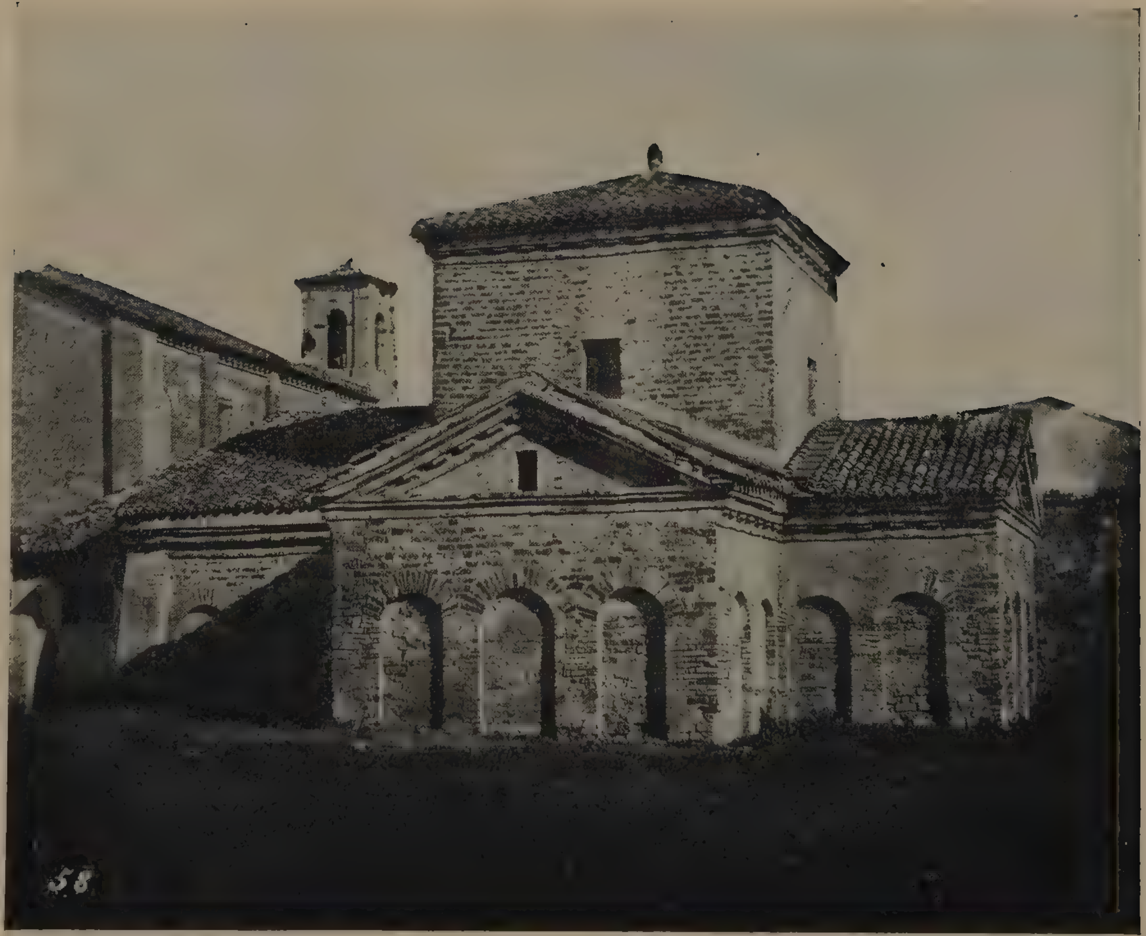

Fig. 62. Tomb of Galla Placidia. General View

and mosaic, as is not to be seen elsewhere, except in St. Mark's at Venice.

But earlier than St. Mark's (about 800), there was a church, erected by Charlemagne, which shows the influence of S. Vitale to a remarkable degree. This was the chapel of the royal palace at Aachen or Aix, hence the name Aix-la-chapelle. The plan (Fig. 63) is a polygon of sixteen sides, one hundred and five feet in diameter. Every two adjacent angles of the exterior converge upon single piers within, which makes the central space an octagon. These eight piers, at the eight angles of the octagon, are connected by arches (Fig. 64), above which, and on which, there is a second tier of arches, the gallery and a clerestory,

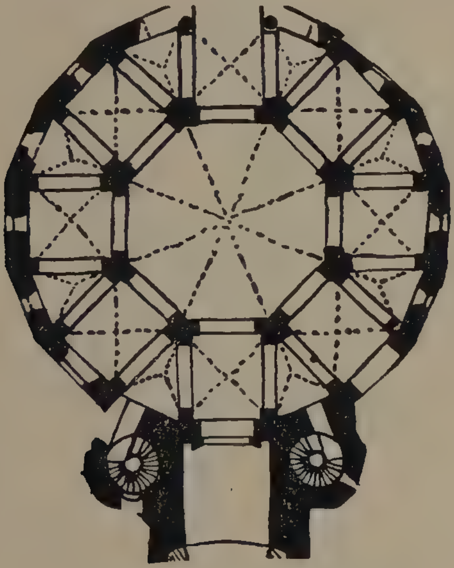

FIG. 63. CHAPEL AT AACHEN. PLAN

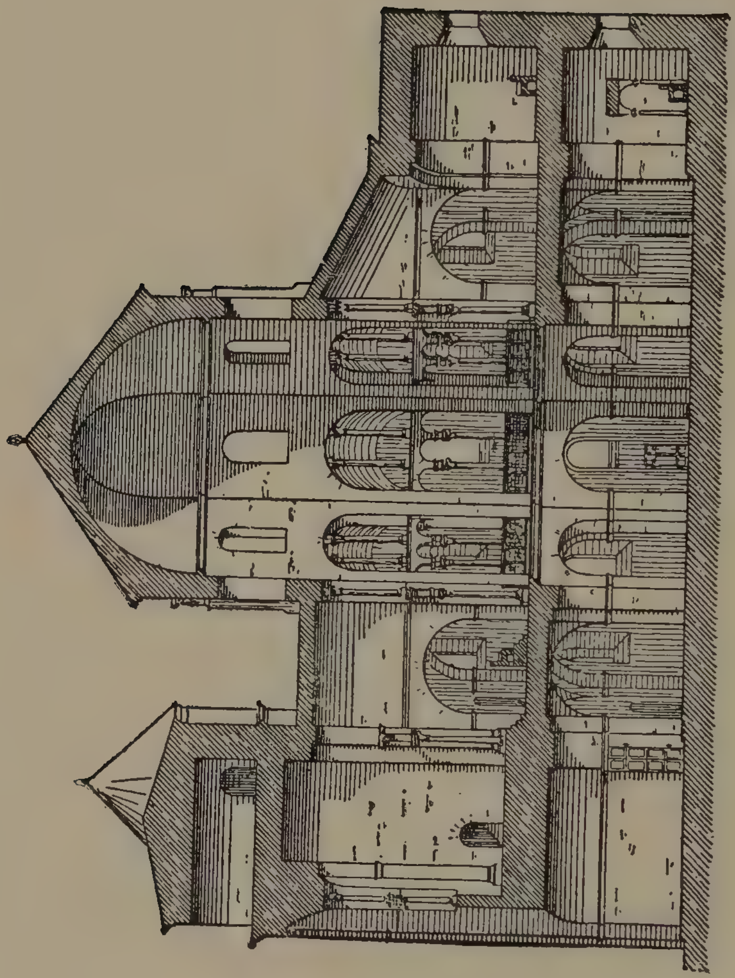

FIG. 64. CHAPEL AT AACHEN. CROSS-SECTION

in reality an octagonal drum, which supports a dome forty-seven and one-half feet in diameter. This building, Byzantine in some respects, Roman in others, and crude in many of its details, is a striking memorial to the man who built it. "Charlemagne," says Norton, "for a moment, by force of heroic personal character, and iron will, evoked order out of chaos, and revived the fading memory of imperial authority, conceived the generous but impracticable design of restoring life to literature and the arts. The famous church of Aachen is the venerable monument of his effort, and one of the most impressive memorials in the world of the power of character over circumstance."

Chronologically St. Mark's belongs to a much later time than such works of Byzantine art as Santa Sophia, but in point of style it is thoroughly Byzantine —if we mean by style the constructional and decorative features which together give to a class of buildings that aspect by which they are known, and by which, as a class, they are separated from all other buildings. St. Mark's [14] in Venice is in the Byzantine style because structurally its vaults, domes, are supported on pendentives, over square compartments; decoratively, because it is overlaid with incrustations of marble and mosaic, arranged and designed as such things are in Byzantine architecture and art generally.

Minor exceptions could be cited but they would not make St. Mark's any the less a work of Byzantine art. It is the most noteworthy late expression of the intimate relations between the East and the West. The present church, built on the site of an earlier building, has stood, practically speaking, as we now see it from the third quarter of the eleventh century. In plan (Fig. 65) it closely resembles Santa Sophia, being an equal armed cross, the reentrant angles of which are enclosed by walls and covered by vaults. The central square compartment, and the four square compartments flanking it, are covered by domes on pendentives (Fig. 66). Externally these domes did not show any

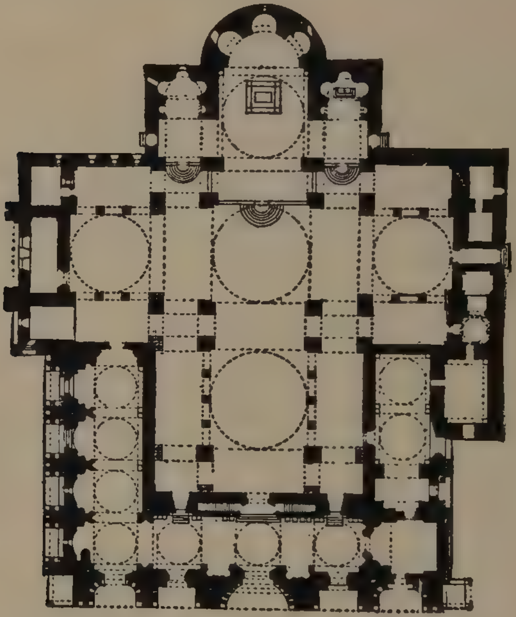

FIG. 65. ST. MARK'S, VENICE. PLAN

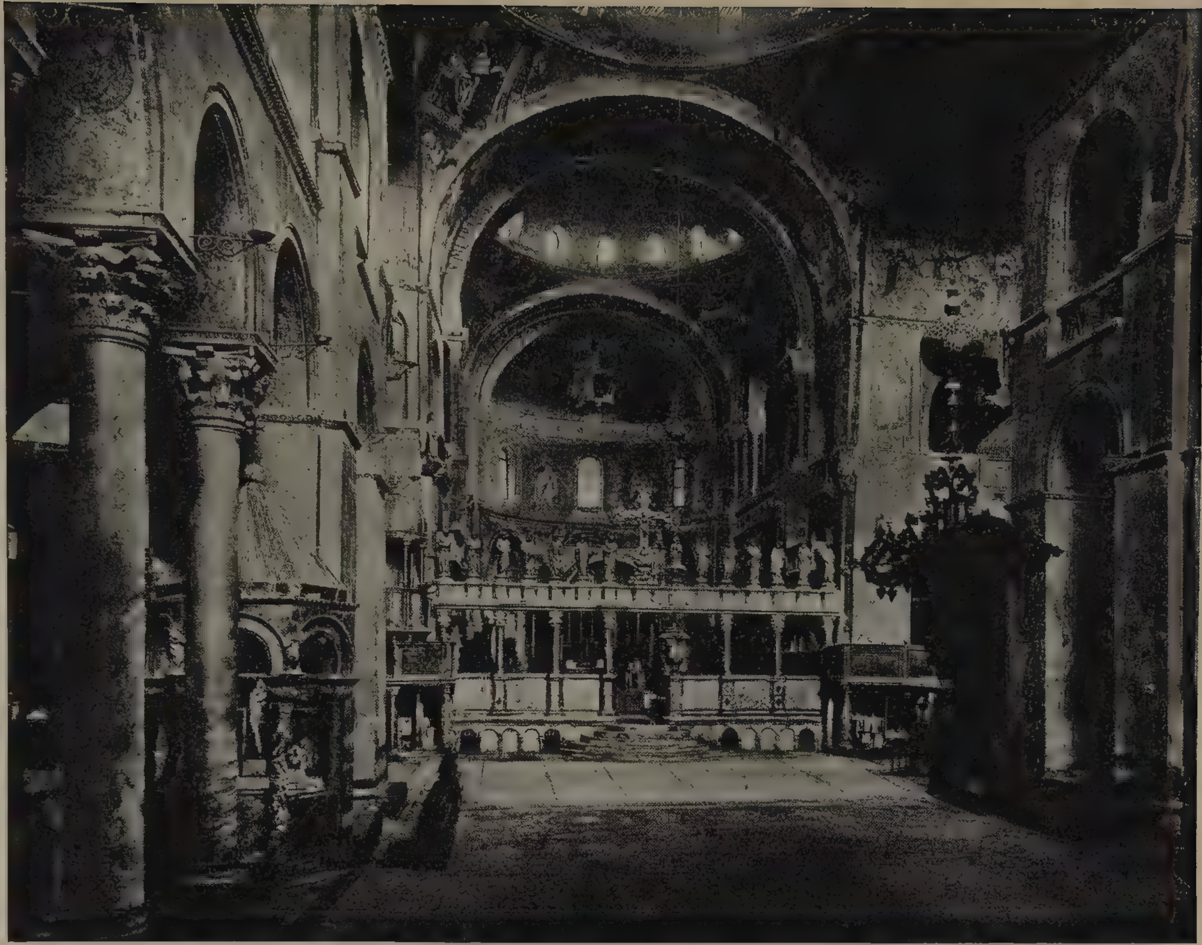

Fig. 66. St. Mark's. Interior

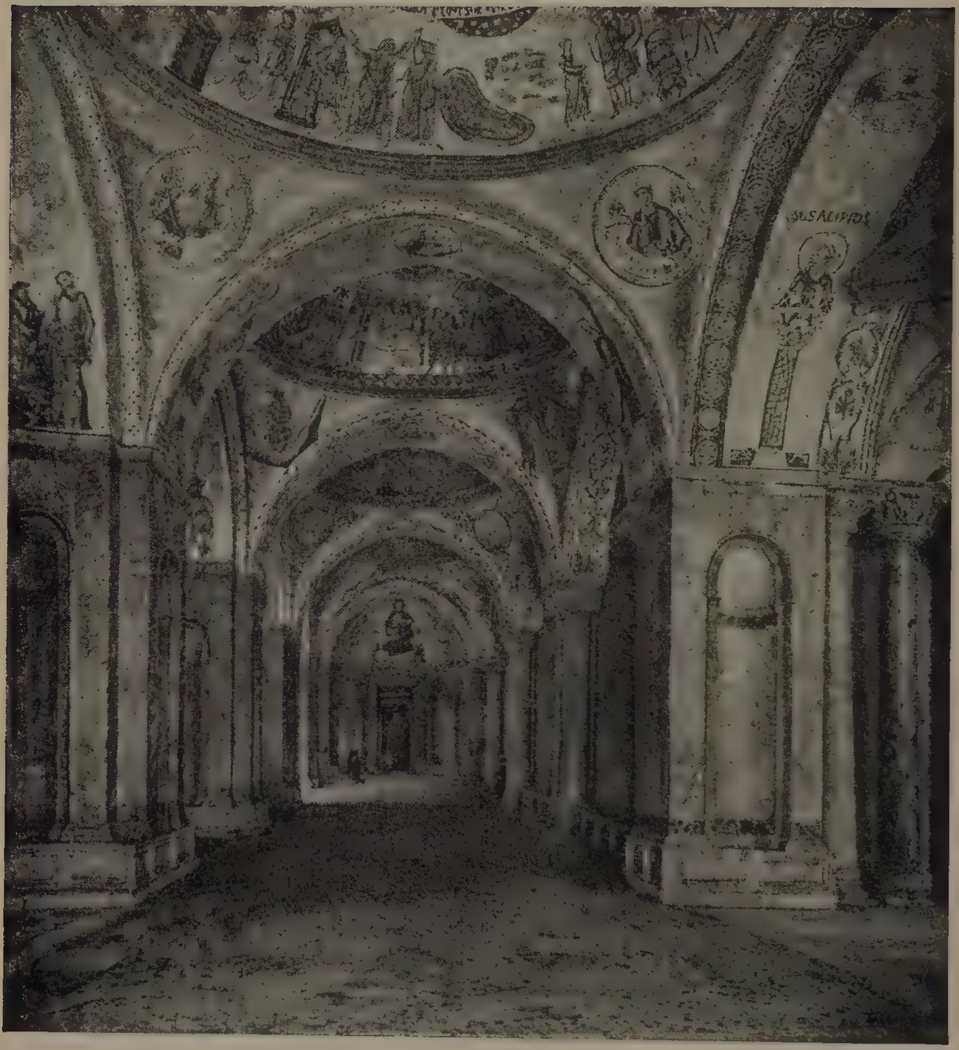

FIG. 67. ATRIUM OF ST. MARK'S (*after Rooke*)

more than those of Santa Sophia. This being so the Venetians later constructed lofty, dome-shaped coverings of wood and metal, thus giving to St. Mark's one of the most conspicuous roofs externally of any building in existence, but one that may justly be called scenic; one that has no logical constructive reason whatever.

There is one notable point of difference in construction between St. Mark's and Santa Sophia. In the latter the gigantic piers which support the pendentives are solid masonry. In St. Mark's the pendentive piers are pierced in opposite directions by arched passageways. This is true of the upper, or gallery range as well as of the ground level. Thus floor space is saved and building material economized. It should, however, be remembered in this connection that St. Mark's is a small building, comparatively speaking; that the two largest domes in St. Mark's taken together have a span considerably less than that of the one dome of Santa Sophia.

In variety of shape and carving, the capitals (Fig. 55), most of which approach more or less the true Byzantine, or cubical type, are most beautiful. The mosaics of the vaults (Fig. 67), marble veneering of the walls, and inlaid pavements of St. Mark's are second—if second—only to those of Santa Sophia. But in one respect St. Mark's, of all Byzantine buildings, stands alone, and is unique among all the churches of all lands. The exterior (Fig. 68) is as splendidly decorated as the interior. It is, however, a fact that most of this decoration is of a later period than the actual building itself. Brick, stone, mortar and concrete are everywhere overlaid with shafts of porphyry, verd-antique, crowned with capitals of alabaster; encrusted with bas-reliefs, carvings and mosaic; the wall-openings filled with grills of stone, and bronze; the doors gilded. This church is a mass of precious building material—a great assemblage of decorative architectural members exquisitely wrought, varying in the date of their production all the way from classical to mediæval days; varying in their sources from Switzerland to India; varying in their execution and design from loveliest to crudest, sometimes ugliest. In this final work of Byzantine art many parts of many sorts are brought together into one harmonious whole of surpassing loveliness.

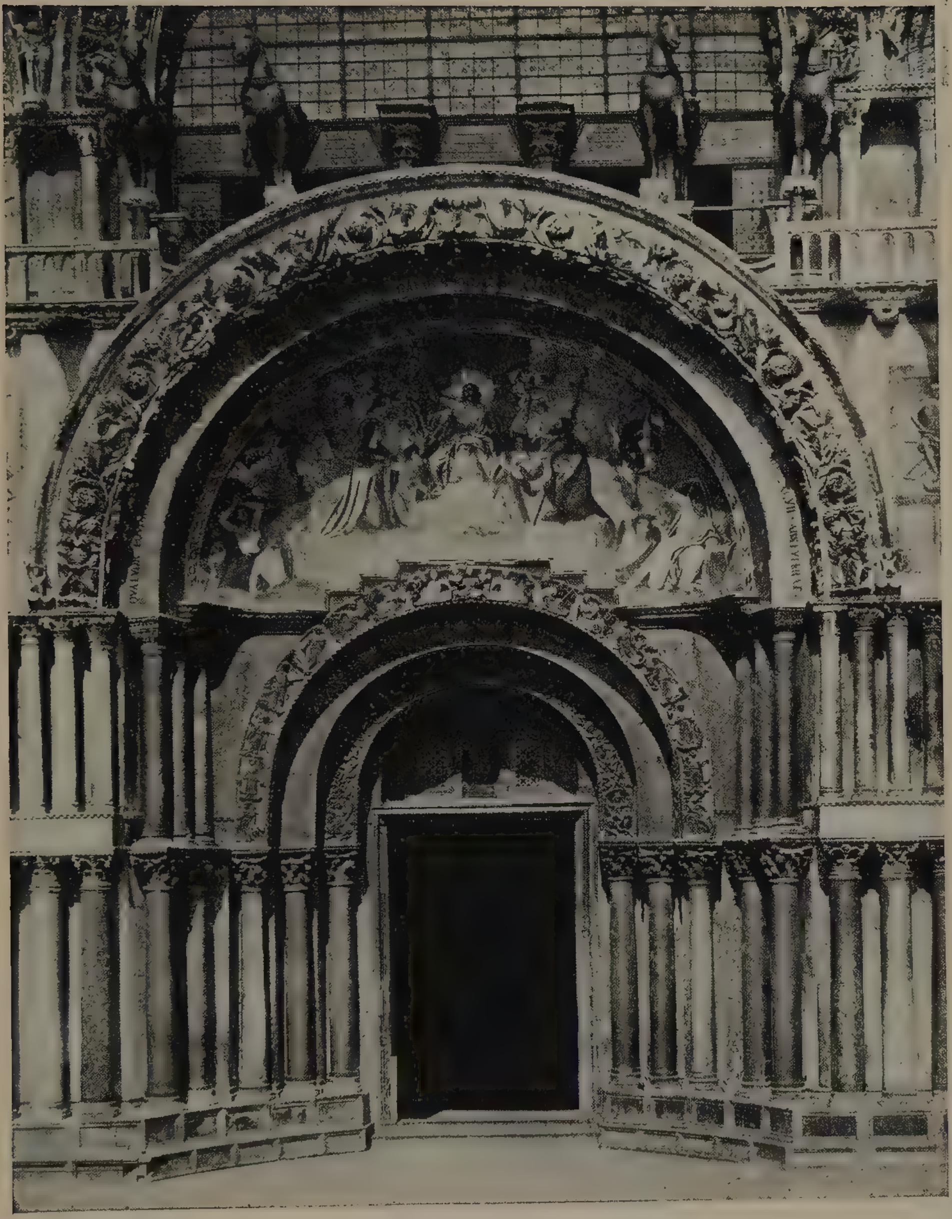

FIG. 68. MAIN PORTAL OF ST. MARK'S

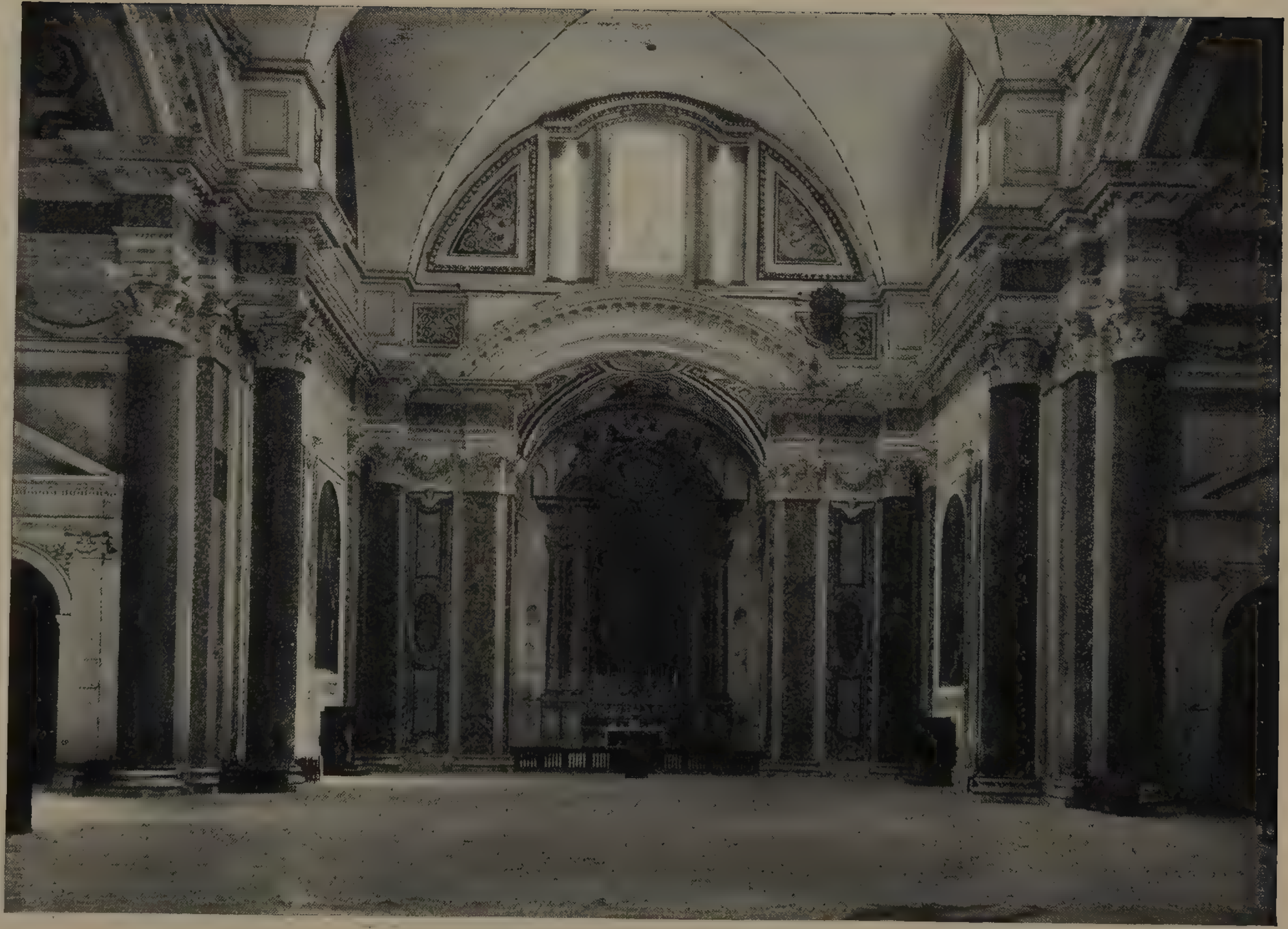

Fig. 69. St. Mary of the Angels, Rome

CHAPTER VII

ROMANESQUE ARCHITECTURE

Charles the Great, whose chapel at Aachen has been described, was king of the Franks. Among the many remarkable acts of this remarkable man two in particular had far-reaching influence. One was crushing the last vestiges of the power of the Barbarian Lombards who had wrought such havoc upon Italy, subsequent to 600 A. D. The other was the protection which he gave the Papacy. His reward was as singular as it was great, for on Christmas day, 800, he was crowned in Rome, by the Pope, in St. Peter's Basilica, and acclaimed Emperor of the Holy Roman Empire. More than king of the Franks, he was now the personage in whom Rome revived her imperial claim, thereto adding the sanction of Christianity. Latin Christianity and German virility were knit together into one power under a title which exercised, says Mr. Bryce, "over the minds of men an influence such as its material strength could never have commanded."

And Bishop Creighton says that the coronation of Charles, "to the Latins, seemed to be the restoration to Rome and to Italy of their former glory; to the Germans it was the realization of the dreams which had floated before the eyes of the earliest conquerors of their race. . . . It put into definite form the belief in the unity of Christendom, which was the leading principle of mediæval politics."

It was what Dante stood for and meant when he made Italy, in the person of the Church, say figuratively to the Emperor, at a time when Emperor and Pope were at fearful odds: "My Cæsar, wherefore dost thou not keep me company, widowed and alone?"

Although the Empire of Charles did fall to pieces under the weak guidance of his sons, the great title, a ghost of the greatest power—that name of Holy Roman Empire—lost none of its magic or its meaning. It presided at the birth of the countries of Modern Europe, France, Germany and Spain having come into existence by the year 1000 A. D.—the very nations that strove constantly to set aside the rule of this same Holy Roman Empire. By the end of the eleventh century the Norman kings had welded England into powerful unity.

An era of unparalleled religious enthusiasm was dawning, the era of the crusades, those long foreign wars made by Christians upon Mahometans, and, at home, the most prolific of all times for church building and the practise of the allied arts in the service of

Christianity. A monk of Cluny writing about this time (1000 A. D.) describes Europe as adorning herself in a fresh garment of churches, the prosaic equivalent of which is to say that with the passing of the year 1000 the plastic and graphic arts, led by architecture, were taking on new life. And that is precisely what did occur.

Between 1000 and 1300 A. D., the time usually described as the Middle Ages, two styles of art are clearly distinguishable if one looks at the monuments of the beginning and the end of the period. The earlier of these styles is known as Romanesque, an art differing from Roman art, yet nearly related to it.

The latter of these styles is called Gothic; an art that was the immediate successor and derivative of Romanesque, in spite of the fact that it is impossible to date, or locate with accuracy, the exact succession; an art so individualistic as to seem "created all out of naught," so far as principles and practise were concerned; an art of consummate accomplishment as compared with Romanesque, about which in spite of all its reasonableness and charm there was to the end always something emergent or tentative.

Gothic art had, practically speaking, almost nothing in common with Roman art. Even the term Gothic, meaning as it did to its originators barbarous or uncouth, implies at least an absolute unlikeness between the art of Rome and that of the last third of the Middle Ages, which was *par excellence* Gothic. The term Gothic falls far behind the truth if understood to mean an art that, at its best, fell short of perfection either in conception or in strength and delicacy of execution.

Romanesque, as a descriptive term applied to art, has a meaning somewhat analogous to the term Romance as applied to language. They were contemporary phenomena. As Italian was based upon the language of Rome, but came to be a wholly separate and independent language, so Romanesque art, based on Roman, came in the end to be a new and independent art, though never absolutely independent or new, and never possessed of a tithe of that splendid finality which stamped the consummate achievements of Gothic art, making it the last word, which, when spoken, was as a tale that is told; a tale of supreme interest couched in forms of reason and beauty. But it would be a mistake to suppose that Romanesque art was not the basis on which Gothic rested. Gothic was an evolution from Romanesque. The elements of Romanesque were essential to Gothic, but Gothic added some wholly new elements, while it changed others, with the result of a closer approach to all-round perfection.

The Romans, it must not be forgotten, used a great deal of concrete in their vaulted structures. Further, their concrete was of the best and strongest sort ever known, and they were past masters in the art of manipulating it. It is probable that many a completed Roman vault acted like, or really was, an integral mass of substance, exerting no more lateral thrust than an inverted earthenware basin. The brick and stone arches which the Romans constructed as centers, permanent centers on which to mold their vaults, did of course exert thrust, but when finally they were embedded deep within the concrete which formed the ultimate visible body of the vault, this thrust ceased, or became negligible. In other words, the nature of the material—concrete—of which most Roman vaults were built, tended to do away in great measure with that lateral thrust which is the salient and difficult feature of the arch principle, the fundamental principle of Roman vaulting.

Concrete was not used by the Romanesque builders. Their materials were for the most part stone and brick, laid in mortar. The aim of the Romanesque builders was to produce vaulted structures, and their models for such structures were first—and chiefly—the buildings of Rome, intact or fallen to ruin, which were scattered thickly over Italy, and not sparsely over the rest of Europe; second, the vaulted structures of Byzantine architecture, so far as such, or knowledge of them, had found a way into western Europe.

Economy of time, material or labor had never figured largely in Roman or Byzantine architecture. Times and conditions were utterly different when Romanesque architecture began to solve its problems and to develop as a really new style. With Romanesque architects economy was the paramount condition of producing. Never was necessity more truly the mother of invention, and rarely has invention been more notably exercised.

The important point is that Romanesque architects, while they made universal use of the round arch as a span element, and as the generative principle of vaults—the element which links Roman and Romanesque inseparably—contrived this round arch in such a way, i. e., out of stone and brick, as to make actual lateral thrust a constant feature of their vaulted construction.

The Abbey for Men at Caen in Normandy, dating from the closing years of the eleventh and early years of the twelfth century, is among the first buildings of mediæval Europe in which a nave of considerable size and height was vaulted. The Lombard Italian cities of Milan and Pavia each boast a church dating from the eleventh century, the actual vaults of which are of later date—in which certain new and characteristic features of Romanesque construction appear; features neither Roman nor Byzantine, therefore fairly to be attributed to the Lombards themselves. In the vaults and vaulting arrangements of the Abbey for Men at Caen, and the churches of St. Michael in Pavia, and St. Ambrose in Milan, we behold the earliest important extant examples of Romanesque architectural construction. In this connection it is interesting to know that Lanfranc, Abbot of the Abbey for Men in Caen, while that church was building had come to Caen from Pavia.

The intersecting vaults of the Romans, such as the elliptical groin vaults of the nave of Constantine's Basilica (Fig. 5), or that of the church of St. Mary of the Angels, formerly a Roman bath (Fig. 69), had their thrusts, whatever they amounted to, gathered at the four angles of the vaulting compartment. The groins were elliptical, and were the necessary geometrical result of the intersection, at right angles, of two barrel vaults of equal span. The brick ribs of such vaults acted as permanent centers on which to mold the concrete, the ribs finally being bedded within the vault; a sort of reinforcement, or reinforced concrete method.

The Romanesque builders conceived the highly practical idea of using ribs as an independent framework (Fig. 70) on which to rest comparatively thin roofing surfaces of stone or brick; the actual vault surfaces. The idea is akin to that of laying boards, the actual roof, upon rafters which of themselves form an independent framework. Thus it appears that the elliptical groins, a *result* of the method employed in Roman intersecting vaults, were the *starting-point* with the Romanesque builders, whose independent framework on which to rest the vaulting surfaces consisted primarily of two arches built across the diagonals of the compartment to be vaulted; next, of four arches built one over each of the four sides of the compartment to be vaulted. These arches, or ribs—six in number, if a complete set—carried the weight of the vault, and gathered its thrusts at the angles of the compartment. The diagonal ribs were rarely omitted. One of the other two pairs often were, but this was a matter which depended in great measure upon the size of the space covered, and the height of the vault. A further very important feature in connection with this independent rib system was the added security which it provided against rupture. A crack starting in one cell, or portion of a vault, was not likely to pass the rib and continue into another. Such danger, if not wholly obviated, was very much lessened by the invention and use of independent ribs.

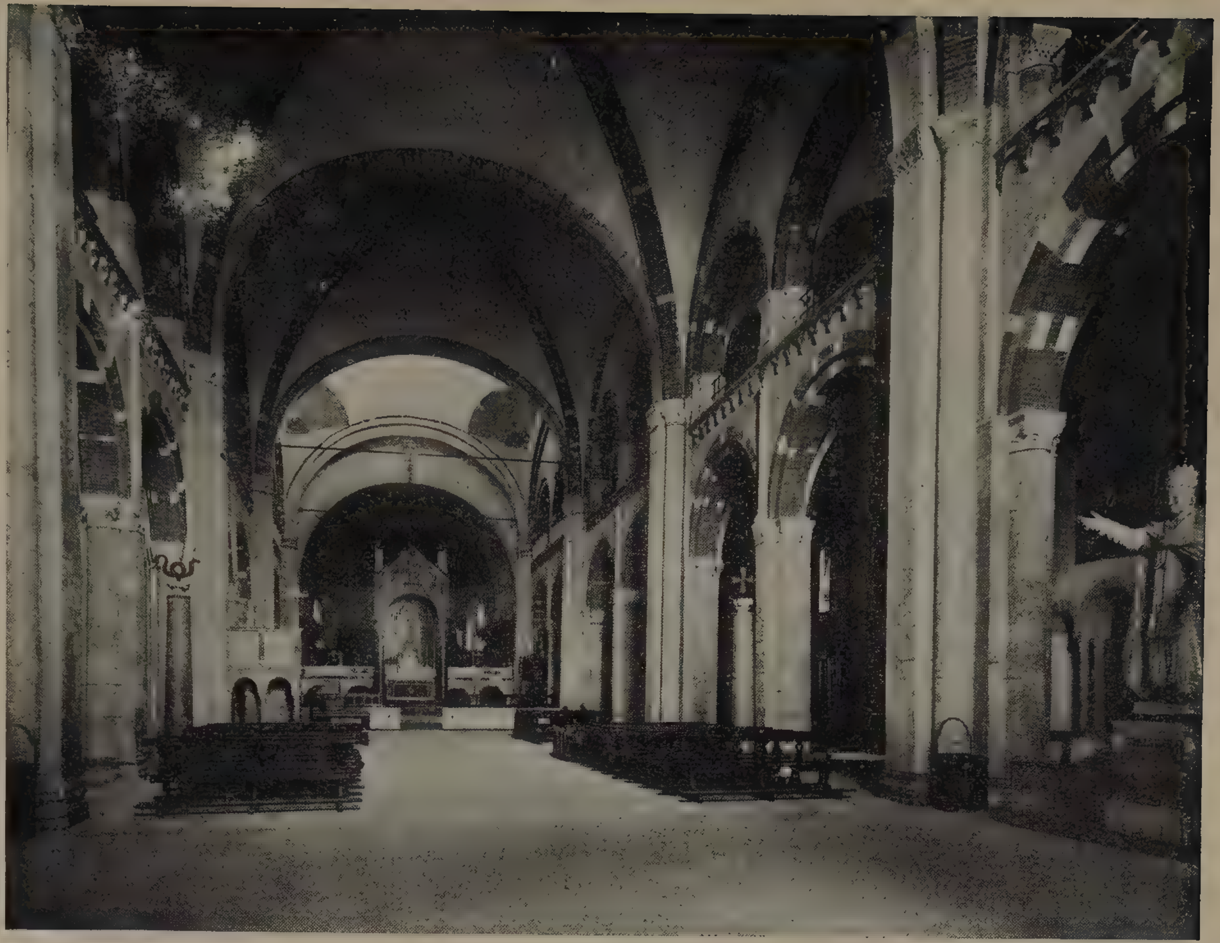

FIG. 70. ST. AMBROSE, MILAN. INTERIOR

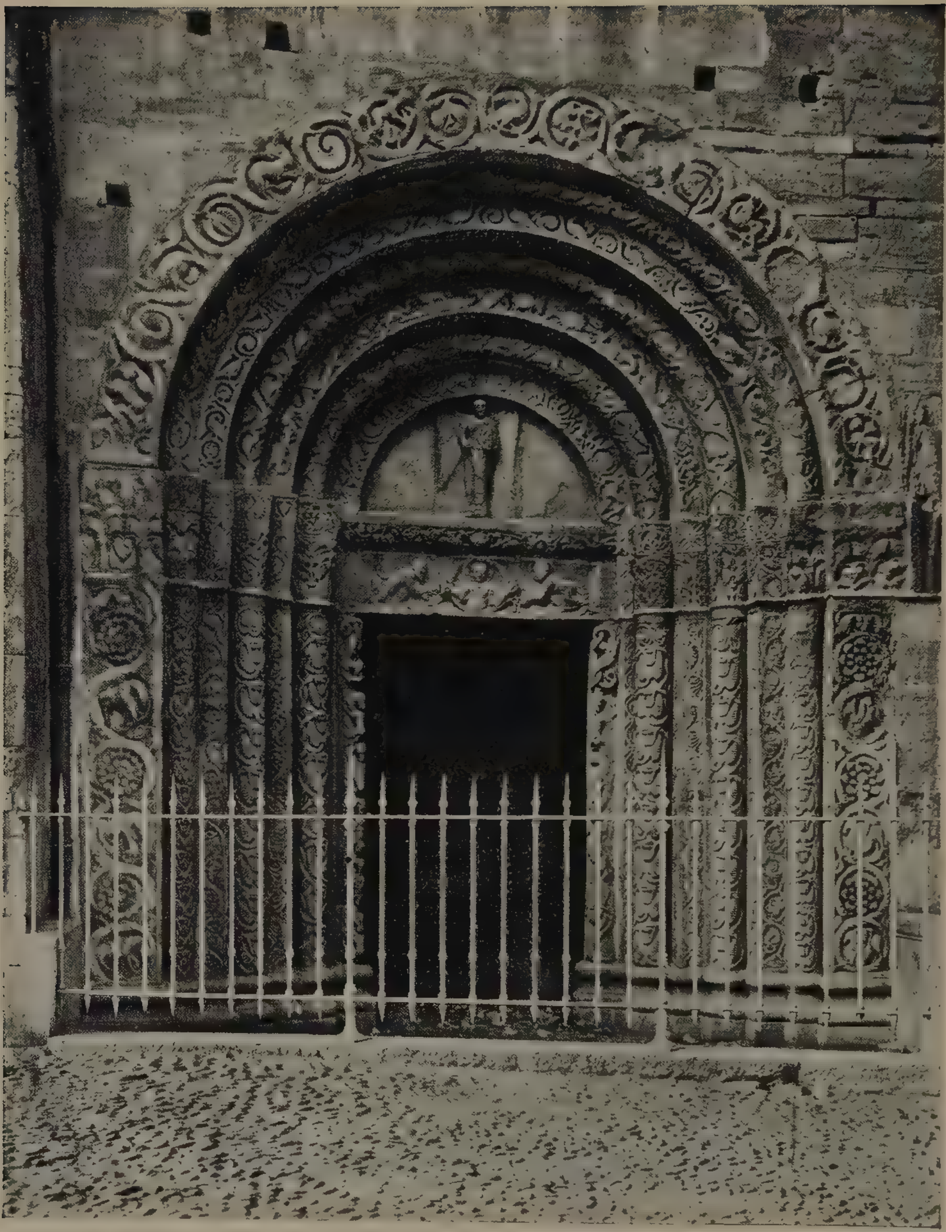

Fig. 71. St. Michael, Pavia. Doorway

These ribs were, as a rule, semicircular, having the round arch form of Roman architecture, the Roman inheritance. It is clear that semicircular arches, or ribs, built over the diagonals of a vaulting compartment—over a square, and, much more, an oblong compartment—would reach a higher level, have a higher crown, than similar semicircular arches or ribs, built over the sides, necessarily shorter than the diagonals. This fact led to doming, i. e., mounding or crowning the covering surface, the vault, in order to make it reach from the level of the crowns of the lower side ribs to the crowns of the higher diagonal ribs. The idea of doming probably came to the builders of Lombardy from Byzantine sources, as it was an expedient to which the Byzantine architects early had recourse. It did not come from Rome.

The Romanesque builders often carried the piers, beneath the ribs of narrower span, to a higher level than the piers from which the diagonal ribs, those of greatest span, rose. This is called stilting, and in a measure did away with the awkwardness and difficulty, even danger, of excessive doming. But for all this a vault constructed on round-arched ribs over an oblong compartment could not be made satisfactory. It was felt to be dangerous, known to be difficult of construction, and seen to be clumsy. Hence the Romanesque builders avoided oblong, intersecting or domical groin vaults, as they were called ("domical" because domed—"groin" because the diagonal ribs form the diagonal groins of the vault). They preferred when possible to plan square compartments, and when not possible, as was the case with the compartments of the naves of some Romanesque churches, not to vault such naves at all. They often compromised on vaults over the small compartments of the aisles, and a timber roof over the nave.

Two more innovations of the Romanesque builders and we are done with the list of their structural inventions and improvements, and the features which mainly distinguish Romanesque from Roman architecture; features which prepared the way for Gothic, as well as made possible many a noble Romanesque building that could not have been built otherwise.

They conceived the idea of an individual support for each rib of the vaulting, although this idea was by no means universally applied. The result was what is known as a compound pier; a pier, and in so far, Roman, having a form unlike any Roman pier; i. e., instead of being a simple square or rectangle on plan, it was of irregular shape, having a central core from which variously shaped shafts, round, rectangular or polygonal projected (Fig. 70).

Lastly, they introduced the method of constructing arches out of small materials (Fig. 72), small stones, or bricks, but giving such arches any desired width. Instead of a single arch having a flat soffit of the necessary final width to start with, the usual Roman method, they would begin with an arch of very narrow soffit. Upon this they would lay a second arch of small materials in a double layer, i. e., side by side; the second projecting beyond the first, and so on until the top of this pile of concentric, ever-widening arches finally attained the desired width. The individual arches or rings are called archivolts and this method of arch construction is often described as "multiplication of members," the separate rings or archings being the members. It is plain that this was an economical way of building arches, as it required only small pieces, for this reason easily obtainable, which could be managed by a single builder, i. e., be carried to place and set by a single pair of hands. Ultimately this multiplication of archivolts, at first merely a structural con-

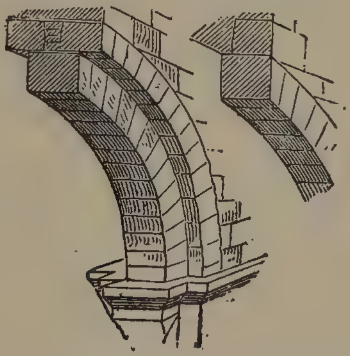

FIG. 72. ROMANESQUE ARCH CONSTRUCTION

venience, led to very beautiful results in the deeply recessed, many-membered doorways of mediæval churches (Fig. 71).

That definition of Romanesque which describes it as the art which has ceased to be Roman and not yet become Gothic, has at least a modicum of truth in it, and is useful.

The vaulting arrangement of the nave of St. Michael's in Pavia (Fig. 73) is of great significance owing to its early date, and the then new constructive method. The method is that already described. It consisted of a system of independent ribs on which the vaulting surfaces rest, together with compound piers which provide each rib of the nave vaults with individual supporting shafts, or members, from the floor up. The further fact that in St. Michael's there is an alternating system of supports, or piers, is likewise of marked significance. The new principles of construction here involved were truly fecund, i. e., they were the first step in a path of constant change and improvement which finally led to the vaults of Amiens and all other great Gothic cathedrals.

A noticeable, and for its time, an unusual feature of the plan of St. Michael's (Fig. 74) is the transept which extends to a very considerable distance beyond the bounding lines of the nave. This feature has been noticed in its most rudimentary form in the Basilica of St. Paul at Rome (Fig. 44).

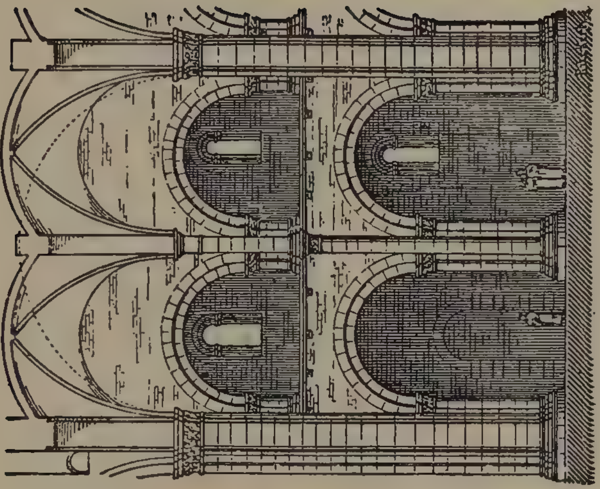

Fig. 73. St. Michael, Pavia. Interior

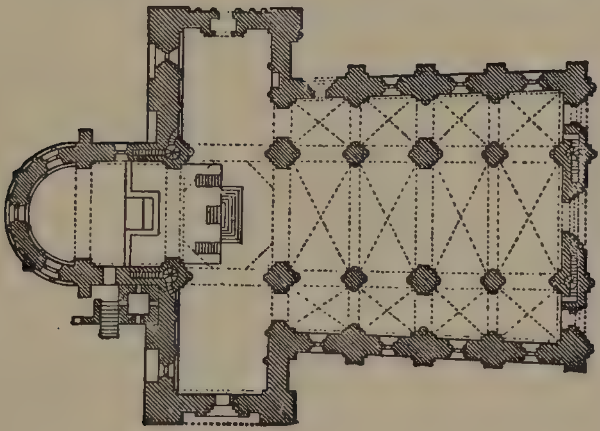

Fig. 74. St. Michael, Pavia. Plan

The plan of St. Ambrose at Milan (Fig. 75)

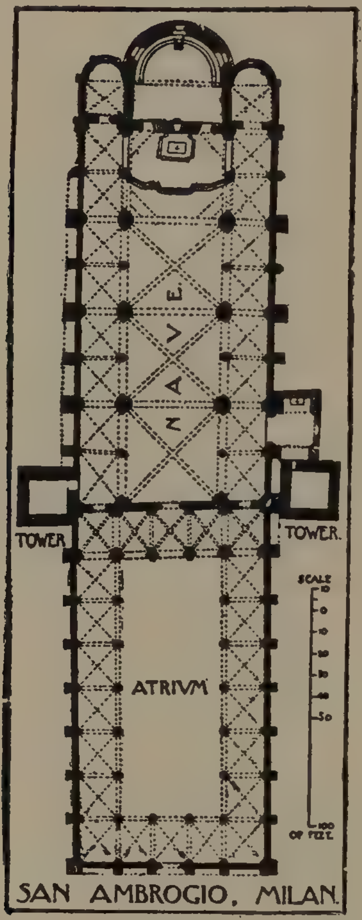

Fig. 75. St. Ambrose, Milan. Plan

shows the compartments of the nave to be square, and four times as large as those of the side aisles. In other words, a single square compartment of the nave is flanked by two square compartments in the aisle. From the heads of the high piers which form the angles of the nave compartment (Fig. 70) independent, round-arched, diagonal ribs were sprung in both directions. Two other independent, round-arched ribs were sprung from the same pier heads across the nave. These are called transverse ribs. Upon this system of independent ribs the vaulting surface was constructed. The vaults above the smaller square compartments of the aisles, which are in two stories —the lower or aisle, and the upper, or gallery—were constructed in the same manner.

As the present vaults of St. Michael's are not those of the original building, and as there is no certainty as to the precise form of the original vaults, indeed if there were vaults at all, there is some reason for believing that in its earliest form St. Michael's had a timber roof.

Returning to St. Ambrose, it is clear that the ribs of the nave vaults must gather the thrusts near, or at the heads of the piers which support them; that these thrusts, so gathered, would be in some measure counterbalanced by the opposing thrusts of the gallery vaults; that likewise the gallery vaults would, so to speak, convey the thrusts of the nave vaults over the aisles, and again concentrate them at points in the outer walls of the building. Provision for this was made by thickening those walls at points (Fig. 75), really vertical lines, in which the thrusts lay. In fact what had been little more than ornamental, at most a respond pier in a wall, a pilaster in classic architecture, was greatly enlarged by the Lombard builders and made into a thick exterior projection capable, by its inert massiveness, of counterbalancing the thrusts of vaults and ribs within. The new architectural member is called a buttress.

Upon examining the plan further and an interior view (Fig. 70), showing the side of the nave between two adjacent piers from which diagonal ribs spring, it will be seen what an "alternating system of supports" is, and what caused such a system to be introduced; a system differing entirely from a regular system of supports—such for example as that of the Basilica of St. Paul in Rome (Fig. 41), rows of columns similar throughout their whole extent, hence regular.

In order to divide the side aisles, which were half the width of the nave, into square compartments, the builders of St. Ambrose constructed an intermediate pier half-way between each pair of adjacent main piers. They then joined the great piers to this intermediate pier by arches, at the same time resting the ribs and groins of the side-aisle vaults upon these intermediate piers.

Further, they floored over the side-aisle vaults, thus making a gallery (Fig. 77), and this arched gallery they opened upon the nave. These upper arches in turn are then carried by a short intermediate pier

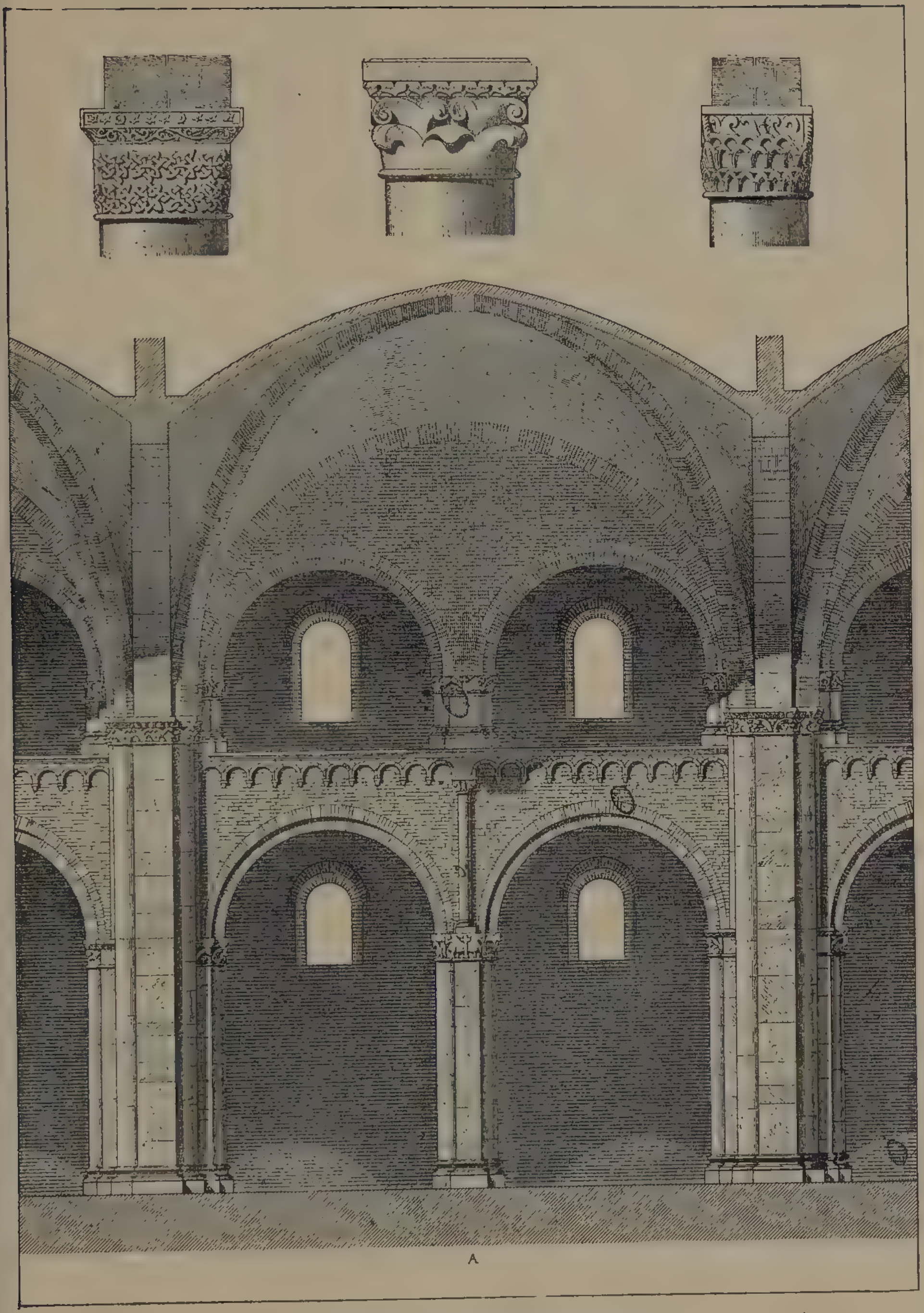

FIG. 76. ST. AMBROSE, MILAN. INTERIOR

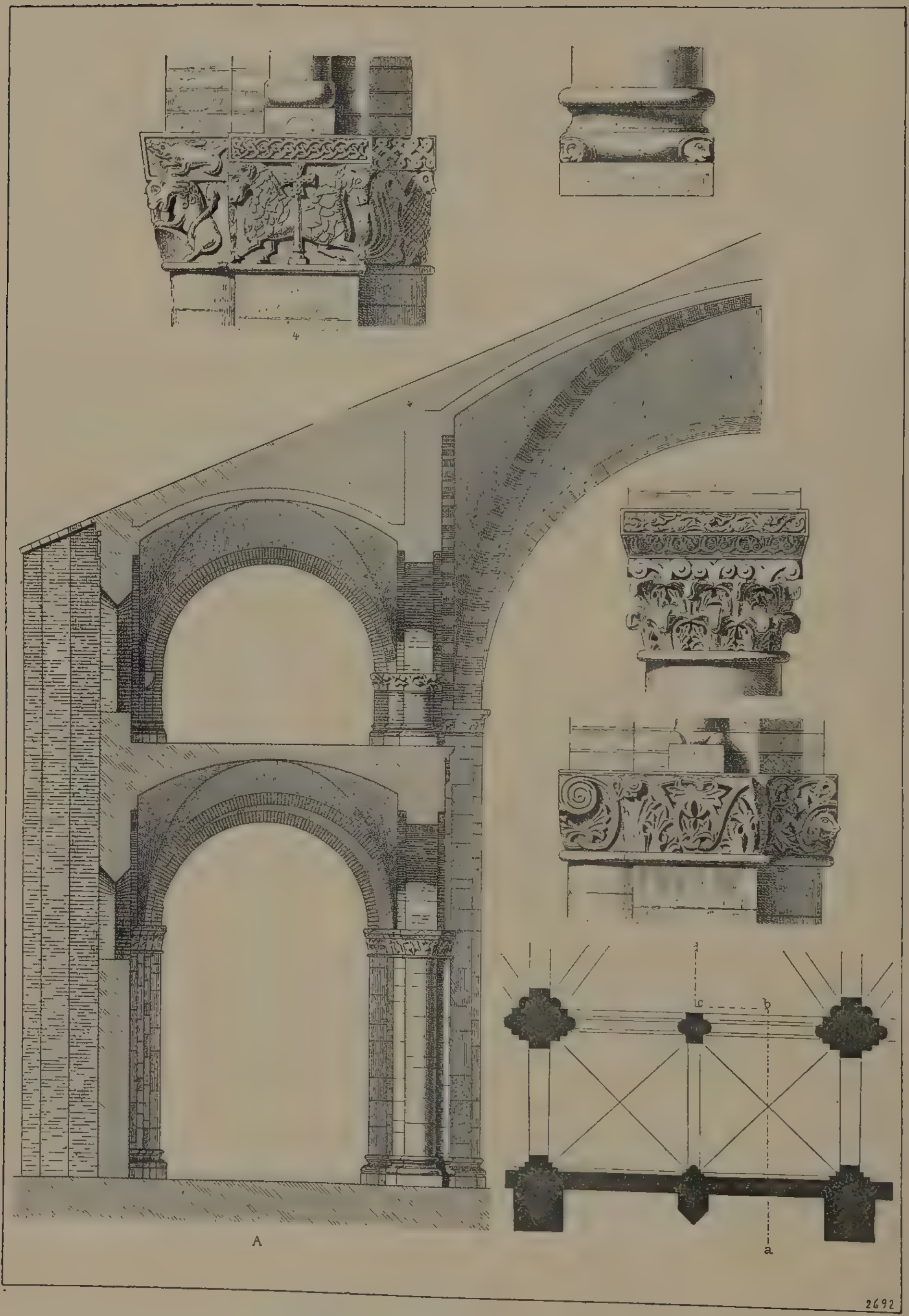

FIG. 77. ST. AMBROSE, MILAN. CROSS-SECTION

which rests upon the taller intermediate pier below them.

The aisle and gallery arches (Figs. 70 and 77) show a double arrangement of archivolts or rings. There is likewise a multiplication of the supporting members in the piers, each archivolt being carried on its own supporting shaft or member.

In the main piers of this alternating system of supports, the members—rectangular in section under the transverse ribs, and round beneath the diagonal—have each their capitals faced in the direction in which the ribs spring. Thus the diagonal ribs spring from capitals set on the diagonal, while the transverse rib springs from a capital faced square to the nave.

In St. Ambrose (Fig. 75) the buttresses even are alternated, a deeper buttress on the line of the great piers, and a shallower buttress on the line of the intermediate piers.

The square vaulting compartments clearly indicate that the original intention was to have four-part vaults such as now exist, whether or not such, or any, vaults were constructed at the time when the building was erected. The fact, however, that the intermediate piers have engaged shafts (Fig. 76) fronting toward the nave has given rise to the question of their purpose. If the original plan did not include nave vaults but only a timber roof, these shafts on the fronts of the intermediate piers might have served the same use, if carried up, as similar shafts did in the eleventh century church of S. Miniato in Florence (Fig. 78), namely, to support transverse stone arches and low walls which at intervals bind the outer walls of the church more securely together; a sort of ligature as well as roof support. Otherwise the attached shafts of the intermediate piers of St. Ambrose were probably intended merely as ornament, a conceivable thing.

Finally, the church of St. Ambrose is interesting and remarkable for its unique vaulted atrium (Fig. 75)—inheritance from the Christian Roman basilica.

The Abbey for Men, at Caen, William the Conqueror's church, was built as a memorial of his victory at Hastings. It is not certain whether the naves of St. Michael's and of St. Ambrose were vaulted when those buildings were first erected. There is moreover a difference of opinion as to their precise dates. This is also true of the vaults of the nave of the Abbey for Men in Caen, known to belong to the early years of the twelfth century. They are among the earliest existing nave vaults, and are of great interest because of their buttressing, and their six-part or six-celled form. The diagonal ribs of these vaults are curves of less than circular sweep really akin

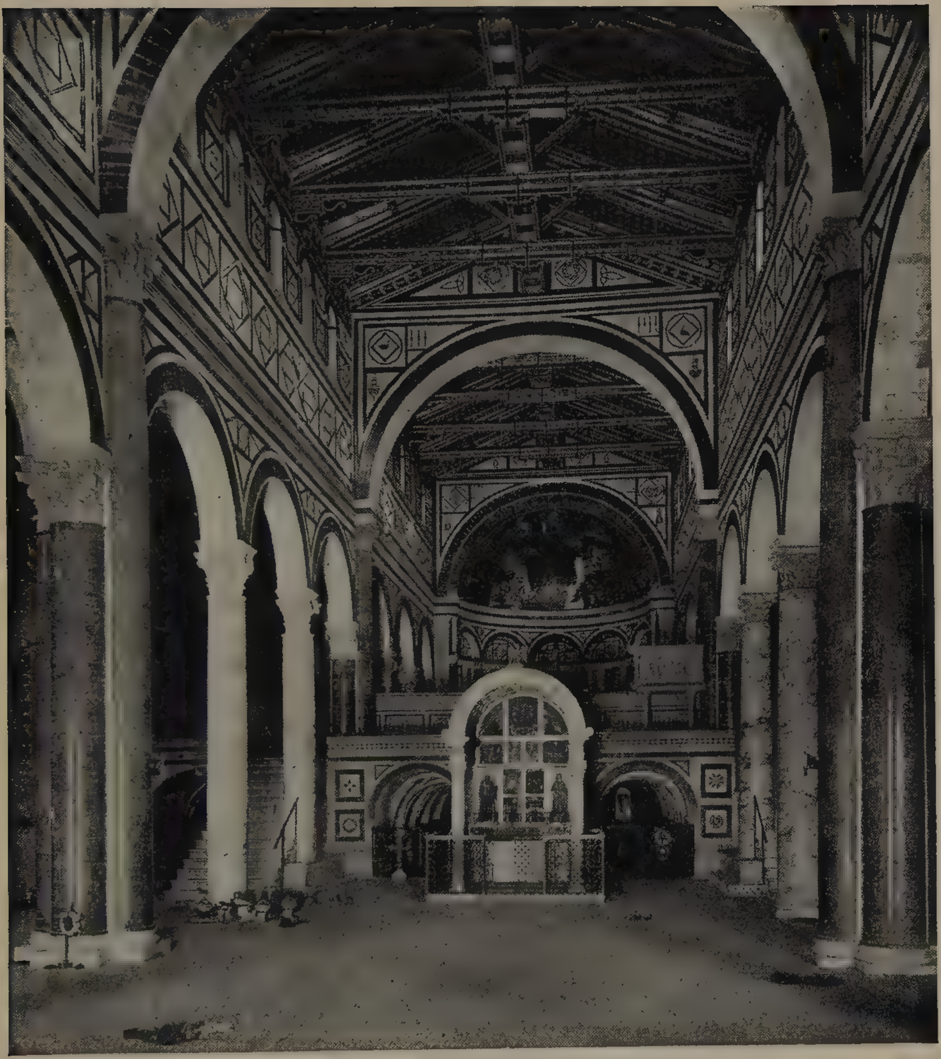

FIG. 78. S. MINIATO, FLORENCE. INTERIOR

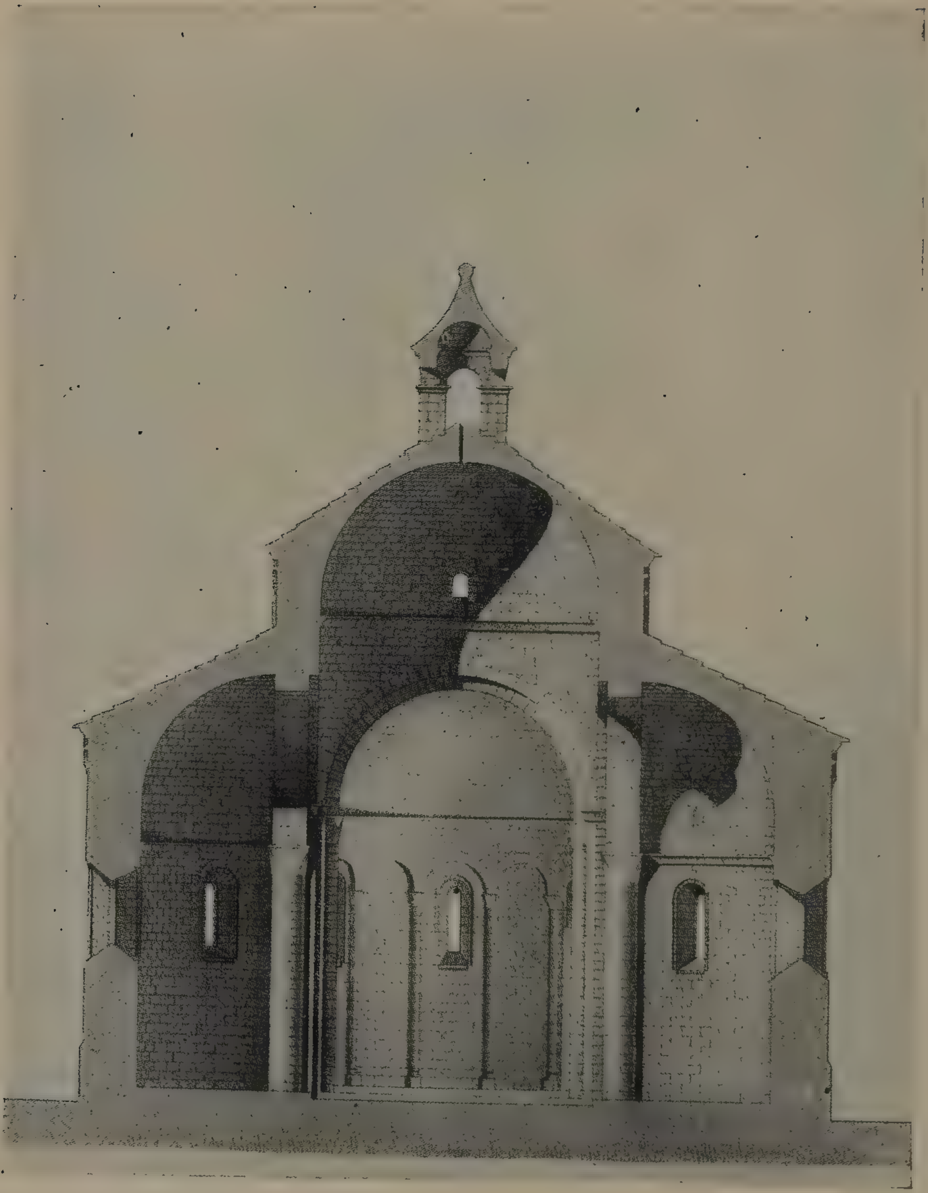

FIG. 79. SOUTHERN FRENCH ROMANESQUE

in shape to the elliptical groins of Roman intersecting vaults. Because of this elliptical shape they exerted an enormous thrust. To meet this thrust (Fig. 80) and make the vaults safe, the builders constructed a continuous half-barrel vault, springing from the outside aisle-walls, on each side of the church, and abutting against the wall of the nave at the level

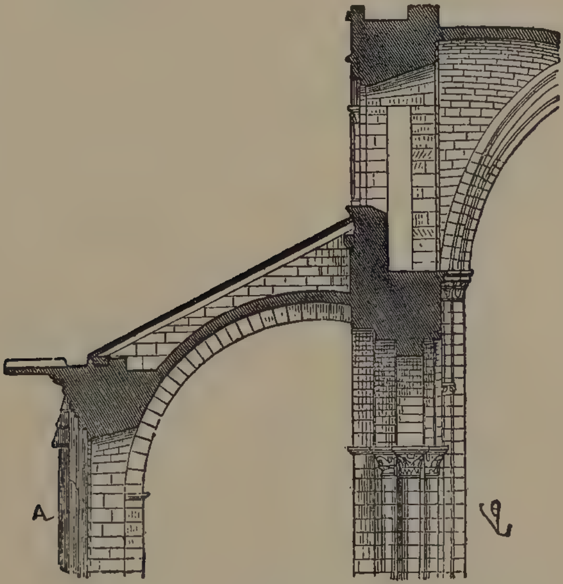

Fig. 80. The Abbey for Men, Caen. Structure

where the thrusts of the high vaults of the nave were gathered by their ribs. In different words, the lower side aisle was barrel-vaulted, while the upper side aisle or gallery was covered by a half-barrel vault, this vault acting as a buttress for the high vaults of the nave. These high vaults are Romanesque in that they rest upon a system of independent ribs, and

Roman in their actual shape, i. e., in that their groins are elliptical. (Fig. 82.)

The bad feature of this arrangement lay in the fact that the continuous half-barrel vault above the aisle exerted a continuous thrust against the wall of the nave and was therefore not only useless, except at the occasional points where the thrusts of the nave vaults were concentrated by their ribs, but actually dangerous. Had not the wall against which this half-barrel vault abutted been of great strength, the thrust would have broken in the wall. Furthermore the level of the abutment was too low to meet the greatest stress of the thrust of the high vaults. The secret of security in this building, and in other buildings of the same period of Romanesque, lay mainly in the actual massiveness of their construction. But it must be clearly understood that Romanesque massiveness in no sense approached Roman massiveness; that the reason for this is to be found in those inventions and improvements which have been described in connection with the Norman Romanesque Abbey for Men in Caen, and the Lombard Romanesque churches of St. Michael in Pavia, and St. Ambrose in Milan.

The vaults of St. Ambrose are quadrapartite, i. e., four-part vaults (Fig. 75), built over square compartments. The vaults of the Abbey for Men in Caen are sexpartite, i. e., six-part vaults; vaults consisting of six

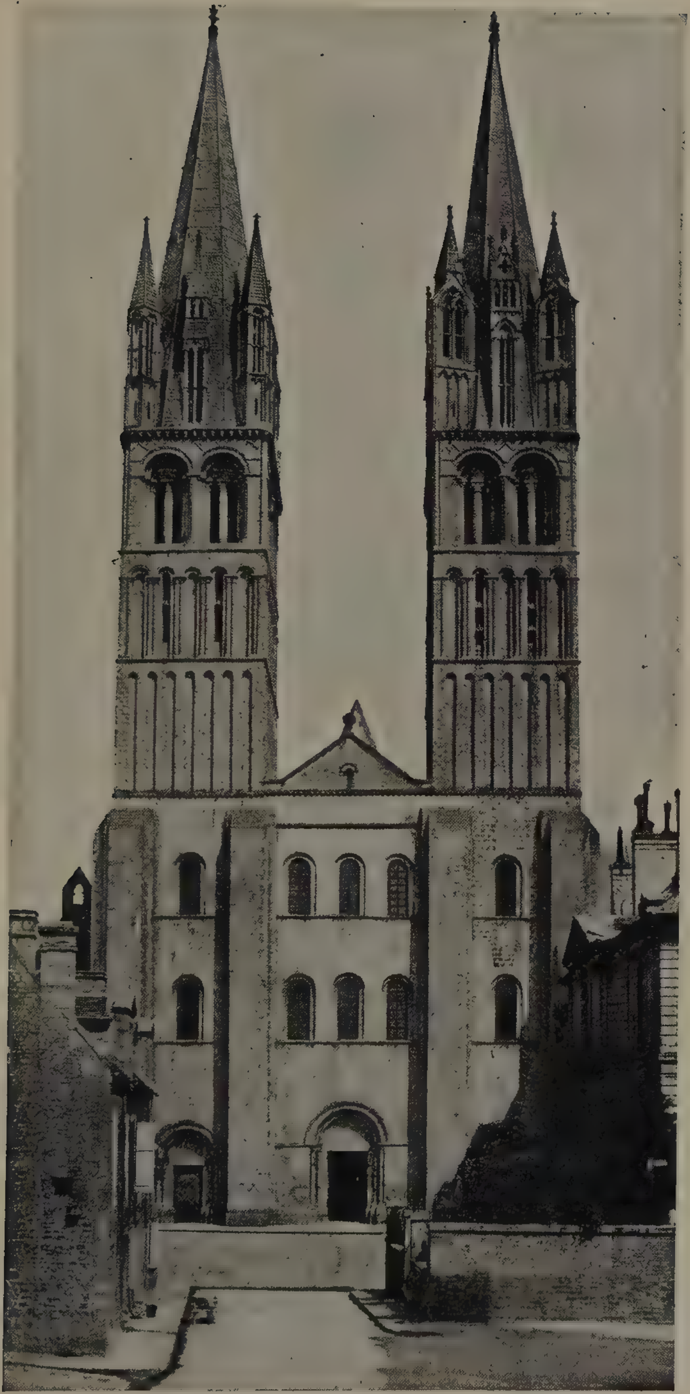

Fig. 81. The Abbey for Men, Caen. Façade

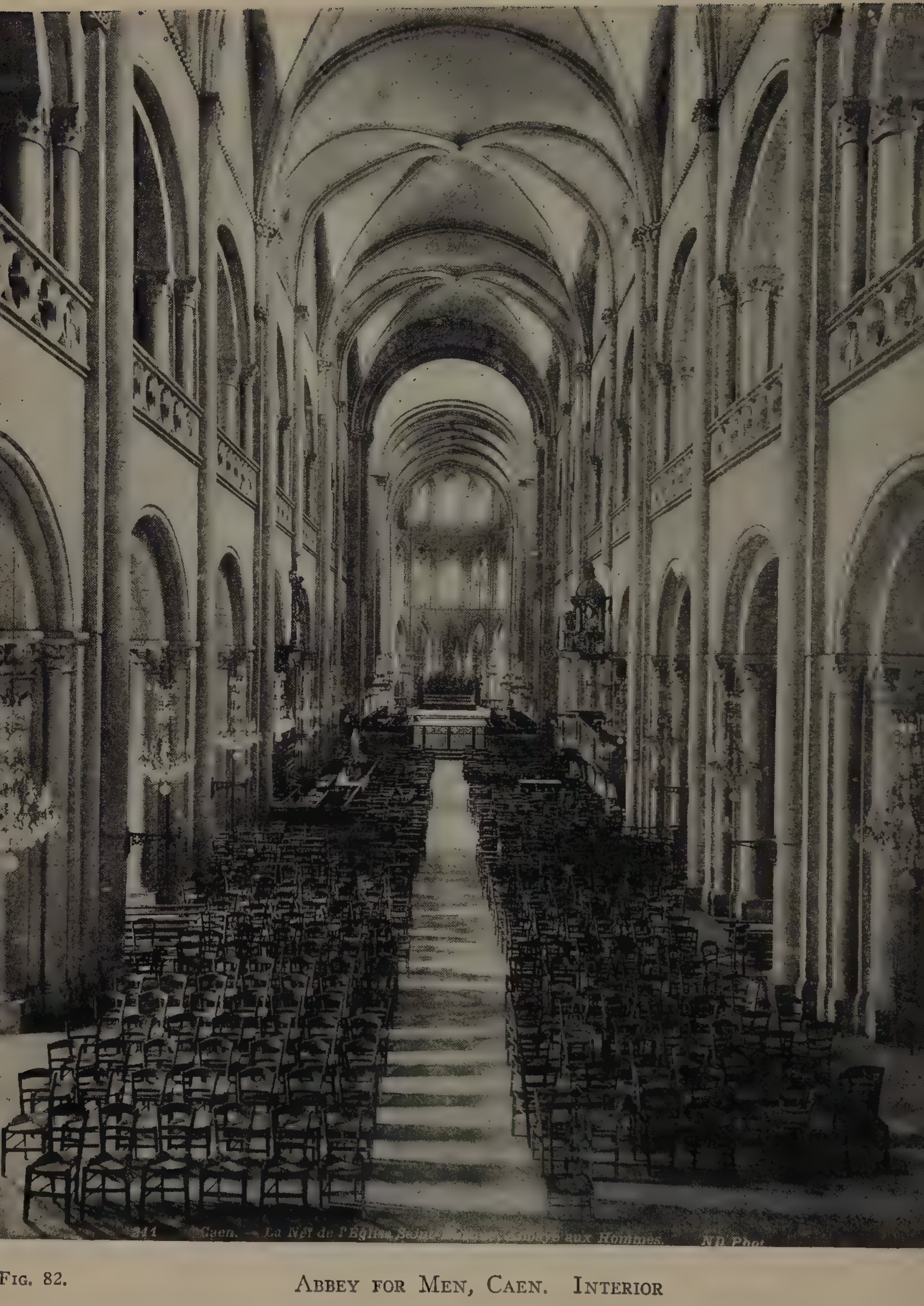
211 Caen. — La Nef de l'Eglise Saint [illegible] aux Hommes. ND Phot.

Fig. 82. Abbey for Men, Caen. Interior

cells. The alternating system of supports, developed in the Lombard buildings, seems made expressly for sexpartite vaults, although such vaults were not constructed upon them in the Lombard churches. This system of supports was used in the Abbey for Men, and here the builders did construct sexpartite vaults. The intermediate piers with their vaulting shafts were carried up to the level of the springing of the diagonal, and transverse, ribs of the nave. From the heads or capitals of these intermediate piers the builders threw round arched ribs—really intermediate transverse ribs—across the nave, thus dividing the four-part or four-celled vaults into six. Rudely carried out in the Abbey for Men at Caen, this was an invention that had far-reaching consequence, because it facilitated the vaulting of oblong compartments, as well as square, not to mention the fact that it greatly increased the strength and security of high broad vaults.

Thus far the consideration has been of structural matters wholly. There was much Romanesque architecture however in which there was no constructive advance, or improvement, upon the methods of early Christian building in Italy. There was nevertheless much beauty, and a vast deal of charm and interest in this unprogressive Romanesque; unprogressive, i. e., on the side of construction.

What the Lombard Italians did in Pavia and Milan has been described. So also what the Normans did in Caen. Elsewhere in France the principal monuments of the Romanesque style were erected south of the river Loire, most notable of all being the gigantic abbey at Cluny which came down intact until the time of Napoleon. This church was more or less imitated everywhere, so great was the influence and power of the religious order of Benedictine monks whose control, spiritual and temporal, was centralized at Cluny, and radiated thence over the entire continent. "The Abbot of Cluny," says Emerton, "was probably, next to the pope, and frequently far more than he, the leading clerical personage in Europe. He was regarded as the head of the whole congregation, with its hundreds of houses, its enormous landed estates, and its far-reaching control over the actions of men;—this Burgundian Monastery gained an extraordinary hold upon the mediæval conscience."

Again, some extremely interesting types of Romanesque architecture were developed in the south of France, at Arles and in the neighborhood of Nimes. It was in this region that Imperial Roman art lasted longest, maintaining its integrity after the fall of Rome and the general disintegration of the Empire.

It was from this region that much of the zeal of the crusades evolved; zeal at first so profoundly religious; zeal that later became mercantile and practical, disguising itself in the cloak of religion. Among the important figures of the first Crusade (1096 A. D.) was Raymond, Count of Toulouse. With him and some of his companions who during the crusade found their way into Syria, and visited the early Christian cities of the desert, in particular the city that had grown up about the great church built in honor of St. Simeon Stylites—with Raymond and his companions many architectural forms and details of Syrian origin came back to the south of France, and were there grafted upon the lingering forms of Roman architecture. A strange and wonderfully picturesque style was the result, of which the church of St. Gilles, near the mouth of the Rhone, is a fine example. The porch of this church is in the main a copy of the porch of the church of St. Simeon in Syria, yet strikingly classical in its detail, like so much of the contemporary work of the region in which it was built.

The Romanesque development in Germany, especially along the Rhine, shows the influence of Italian Lombard work on the side of vault construction, but externally these buildings, the cathedral of Mainz for example, are far more impressive, as well as splendid. They are in fact among the finest specimens of church architecture in existence.

The Norman occupation of England, and the Norman conquest of southern Italy, meant of course that such ideas of building as obtained in Normandy—Caen and its abbeys—were carried into those lands and there mingled with whatever architecture already existed; with Saxon building in England; with old Italian, Byzantine and Mahometan in South Italy and Sicily. Of the latter type the church at Monreale, Palermo, begun in 1174 A. D., is an instance; of the former, the early parts of the cathedral of Canterbury, or the cathedral of Ely, in England.

In northern Italy the principal monument of the Romanesque style, not structurally important like St. Michael and St. Ambrose, but important as being one of the largest and loveliest buildings in the world, is the cathedral of Pisa.

The buildings already referred to—the Abbey of Cluny in central France, the church of St. Gilles at the Rhone mouth, the cathedral of Mainz on the Rhine, the church at Monreale in Sicily, and the cathedrals of Canterbury and Ely in England, and Pisa in Italy, will now be considered—not as affording in any sense a complete historical representation of Romanesque architecture, but as illustrating with adequacy the various varieties of Romanesque architecture, other than those which developed new and progressive structural principles—the Abbey for Men, St. Ambrose, and St. Michael—during the last of the eleventh century and the greater part of the twelfth, or until Gothic came into being, which in a short while wholly changed the architectural aspect of the European world.

In Provence, especially about the mouths of the Rhone, the churches were frequently covered with vaults of the barrel type, but pointed in section. The origin of this pointed section is not clear, but two advantages which it had were early grasped, so that it soon became general. In the first place the weight of such a vault is distributed in a way to render it much more nearly self-supporting than a barrel vault. In the second place the outer covering of such a vault, tiling or whatever else, could be applied directly to the surface of the vault, thus doing away with the necessity of a separate covering of timber to give the required pitch for throwing off rain or snow. Thus in the true Roman fashion the inner vault and the roof itself were one and the same, a more monumental method of construction than that of later ages when the inner roof, the vault, was covered by a high gable of leaded timber—a double arrangement of inner vault and outer roof.

In the churches of Provence the pointed or round barrel vaults of the nave were frequently buttressed by similar, narrower, pointed barrel vaults or half vaults over the side aisles (Fig. 79). The thick outer wall of the building had to be capable of meeting and overcoming the thrusts. The fault of this method lay in the fact that it made any considerable, almost any, clerestory impossible, as the cross-section shows.

The porch of the church of St. Gilles (Fig. 83) is as beautiful as it is interesting. It is a design, stamped with Roman characteristics, that has nevertheless ceased to be Roman. On the other hand it marks no approach to Gothic. Compare the portals of Paris or Amiens (Figs. 138 and 114) with this of St. Gilles. They are deeply recessed; this is shallow. The similarity of the general plan of the St. Gilles porch to that of the Syrian porch of St. Simeon is marked. It is interesting to know that the able and delightful American architect, Richardson, based his design for the main entrance of Trinity Church, Boston, upon that of St. Gilles. But in no sense is the Trinity porch a copy of St. Gilles. Neither is St. Gilles a copy of St. Simeon in Syria. In both cases we see a free, powerful and imaginative mind expressing itself independently,

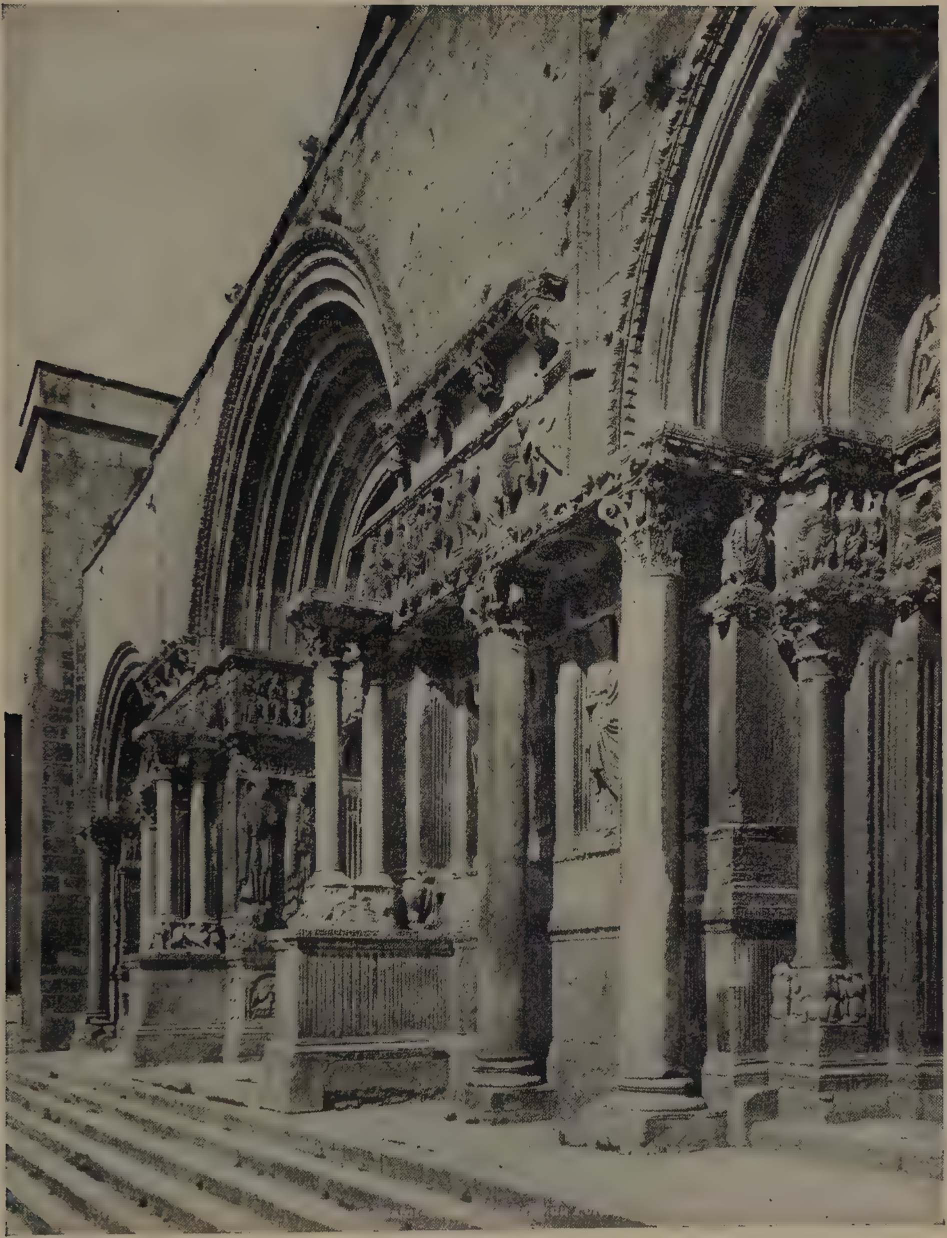

FIG. 83. ST. GILLES. PORTALS

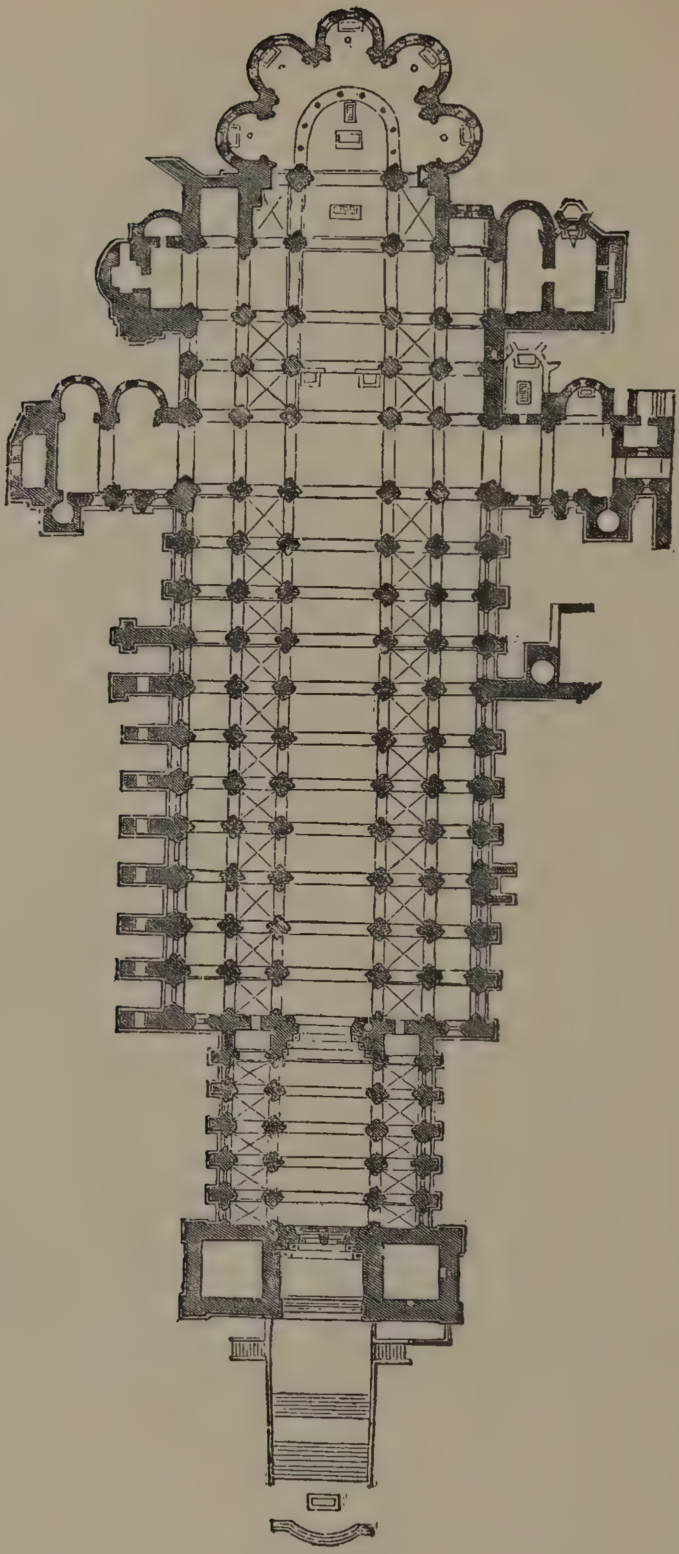

Fig. 84. Cluny. Plan

however much the inspiration for the subject in hand may have been derived from the work of a predecessor.

The outer moldings of the many archivolts of the three round arches, above the doorways of St. Gilles, are decorated with thoroughly classical patterns. The archivolts, or their moldings, are cut upon the faces of large voussoirs, of which there are but two sets, an inner and an outer over the side entrances, and four over the central. The capitals of some of the columns are of pure Corinthian type while others, however much they vary in detail, do not really vary much in form from Corinthian. The acanthus carving on the lintels of the side doors, and the Roman fret, and the scroll leafage above the figures and at either side of the main entrance are thoroughly classical. So too the pedestals of the columns, and basements beneath the columns. In this regard there is much that recalls the columnar decorations of the arch of Septimius Severus, the columns standing free from the wall or pier.

But when the sculptured human figures are considered, their false proportions and general rudeness of conception are a far cry from classical Roman work of the same sort. The animals are, as a rule, more true to life, in their movements at least. But nothing could be more remote from classical tradition than the disposition of these animals upon the fronts of lintels, or as the bases of columns. In this latter position they recall oriental and Assyrian things, although they are altogether typical of Romanesque usage, particularly in North Italy. Especially crude are the bas-reliefs above the doors.

On the other hand, for compactness throughout the whole design, and for unity and clearness, it would be hard to find anything superior. If not graceful in its details, this porch is certainly harmonious, and what it wants in fineness of workmanship and formal beauty it more than atones for in freshness of interest. The dignity of it is beyond question, and dignity —the opposite of triviality in architectural design—is one of the rarest and one of the most precious qualities of architecture. The Romanesque of St. Gilles is the Romanesque of Provence, where, as has been said, the Roman or classic influence continued paramount almost down to the close of the Middle Ages.

We now come to the Romanesque of Burgundy, the great territory north of Provence, the bounds of which fluctuated from time to time, and the extent of which was often equal to the entire heart of present-day France—a great and fertile land ruled over by the dukes of Burgundy. Here classicism never had a very firm hold, and the Barbarians were always powerful. In this region Roman and Barbarian met, and for centuries the ideas of each continued. It was the strong-

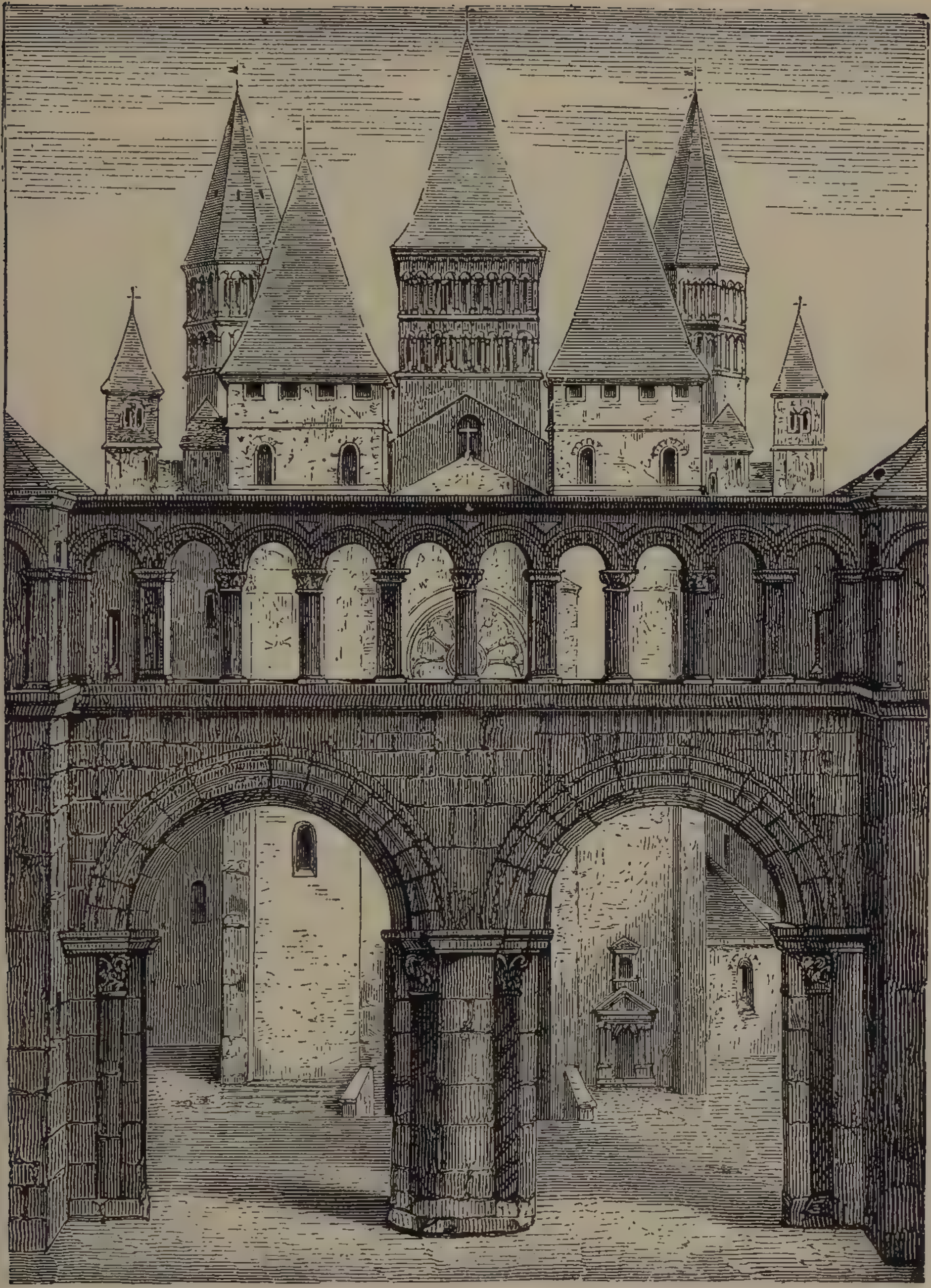

Fig. 85. CLUNY. A RESTORATION

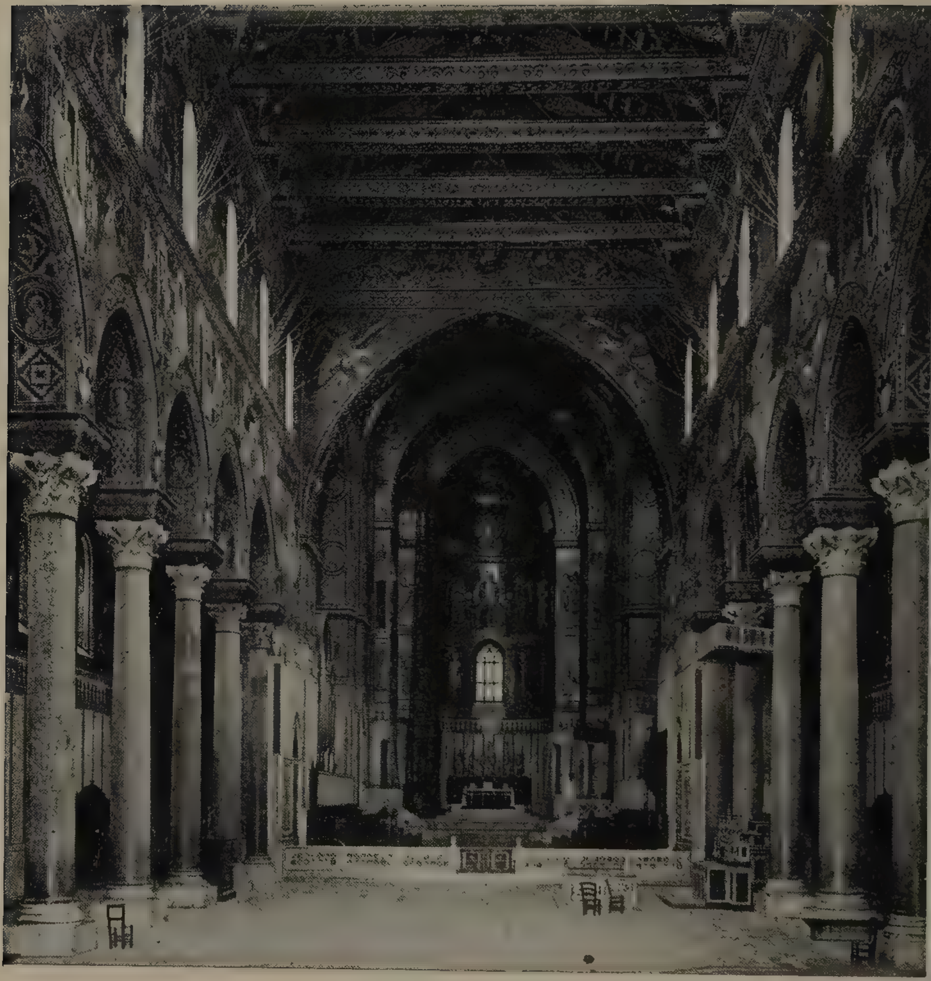

FIG. 86. MONREALE. INTERIOR

hold of monasticism during the eleventh century, the power of which was centered at Cluny, and thence radiated to every part of Europe. Of all monastic buildings the great Burgundian Romanesque church of Cluny was the finest, as it was one of the largest, of any time. It was known as the pride of Burgundy. It was the hearth, so to speak, about which the intelligence of the early Middle Age gathered. It stood for orderly living, and government, and it was the bulwark of Christianity. Finally, it was the great civilizer of Europe. Faith and art went forth from its cloisters conquering ignorance and superstition. It was the patron of science and letters, and the champion of religion. The abbey-church of Cluny was built, really rebuilt, by Abbot Hugh (1089) while the actual construction was planned and overseen by the monk Ganzon. With interruptions the work was continued until 1228.

The plan of Cluny (Fig. 84) included a fore-church—descendant of the atrium—and two transepts, both toward the east. The great apse was circled by five small apses, while other apses were added to the eastern sides of the transepts. These latter were used as chapels and dedicated to different saints. Two lofty towers (Fig. 85) flanked the entrance to the fore-church, and a great tower rose above the crossing or intersection of the nave and the main transept. There were also towers at the ends of this transept. There were smaller towers adjoining the second transept. The length of the building from west entrance to eastern apse was five hundred and eighty feet. The width, including the double side aisles, was one hundred and twenty feet. The nave itself was thirty-seven and one-half feet broad and was covered with a pointed barrel vault. This vault was reinforced by transverse ribs which were sprung from opposite pairs of piers throughout the length of the nave. Intersecting vaults covered the side aisles. The apse was vaulted with a half-dome carried upon eight columns, thus allowing a free view into the five radial chapels beyond. The entire structure covered upward of seventy thousand square feet.

The uninterrupted vistas of the interior, together with the massive character of the construction, must have been very impressive. Outside, the Abbey of Cluny, with its double transepts, many apses, and eight greater and smaller towers, was beyond doubt one of the most picturesque and stately architectural achievements of the Middle Ages. This famous monument was swept away during the French revolution.

From the time of Charlemagne, Byzantine power, with a corresponding reflex of Byzantine art, held doubtful sway in southern Italy and Sicily. Saracen invaders gradually overran this territory, and with them came Saracenic or Mahometan forms of art. At last, in the eleventh century, the Normans, by driving the Saracens out, got possession, and as early as 1085 all southern Italy had acknowledged a Norman lord. In this period also these same Normans conquered Sicily and subjugated the Saracens there. Thus came the Norman kingdom in Italy, a powerful state built upon the ruins of long departed Greek and Roman civilization, and recently established Saracenic. This Norman civilization had its own art, its architecture being Norman Romanesque modified by Byzantine and Mahometan features. The beautiful church at Monreale (Fig. 86) above Palermo is a fine example. It is a basilica with a timber roof. The columns flanking the nave are classic Corinthian and Byzantine. Above each capital there is an impost block like those used at Ravenna. From them spring the arches that carry the wall of the clerestory. These arches, and the great arches which give entrance to the choir and apse, are pointed. The east end of the church is raised to a considerably higher level than the nave. No new principle of construction is involved. In point of richness of material, mosaic, bronze, and in restrained elaboration of ornament, Mahometan designs appearing everywhere, few interiors exceed Monreale for solemnity and grandeur.

Charming and lovely as Southern Italian Romanesque was, or intersecting and far-reaching in its effects constructively as Lombard Romanesque architecture was, neither the north nor the south of Italy produced anything to be compared in size and beautiful impressiveness with Tuscany, particularly Pisa. Just beyond the city, separate and aloof from all that is modern in fact or spirit, happy "in its company and its solitude," stands the celebrated group of cathedral, campanile or bell-tower, Campo Santo or burying ground, and baptistery. In unchanged fashion one here sees a complete and splendid example of the physical body of the mediæval church; the baptistery for receiving and saving the new born and the newly converted; the bell-tower for calling men to prayer; the cathedral for worship; the Campo Santo for burying the dead in sacred earth.

If Lombard Romanesque architecture was highly inventive on the side of construction, and expressive of reasoned thinking about building—the support and buttressing of vaults—Pisan Romanesque was the reverse. The cathedral of Pisa, erected after 1063 (consecrated 1118) harks back in many important respects to the Christian Roman basilica, such, for example, as St. Paul's in Rome. The plan (Fig. 87) resembles that of St. Paul's (Fig. 44), except for the long transepts and the extension of the choir toward the east, which give it the shape of a Latin cross. The choir terminates in a semicircular apse while similar, smaller apses are added to the ends of each transept.

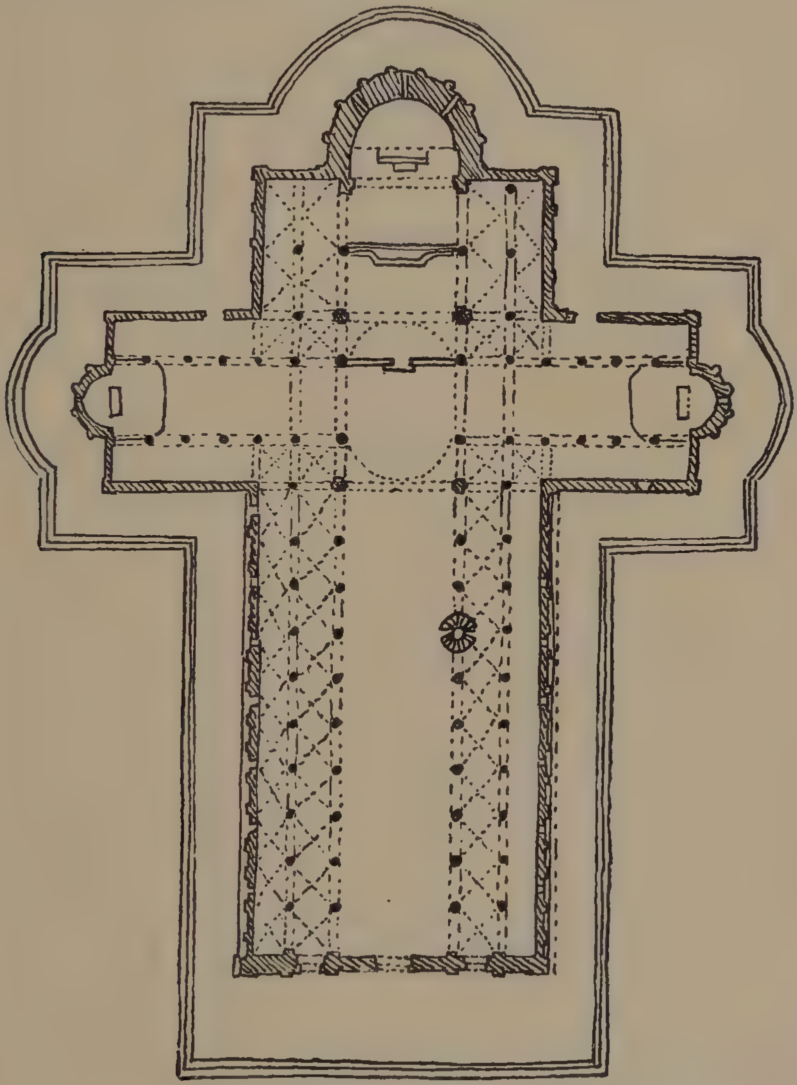

FIG. 87. PISA, PLAN

The nave and choir (Fig. 87) are flanked by double side aisles. Rows of columns, many of them dating back to Roman times, and all of them gathered by Pisan merchants or soldiers, in distant lands, separate the nave from the side aisles, and the side aisles from each other. But at this point the resemblance between the cathedral of Pisa and St. Paul's ceases, while up to this point no marked similarity has been discovered between the cathedral of Pisa and the church of St. Ambrose in Milan, or St. Michael in Pavia. Obviously this building is more closely related to the architecture of Christian Rome than to that of Romanesque Lombardy.

On entering the cathedral one is struck by the greater height of the nave as compared with the naves of the Lombard churches (Fig. 70), or St. Paul's. The reason is not far to seek. The comparative lowness of the Lombard vaults, and accordingly of the Lombard Romanesque naves, was due to the fact that the architects were still experimenting, and did not quite dare take the risks of great height. No fear was felt by the Pisans in this respect because they roofed the nave of their church with timber, and accordingly had to provide neither against the thrust of vaults nor for the support of great weight.

Furthermore, a glance at the side of the nave of Pisa shows that a considerable part of its height is due to a lofty triforium, i. e., a gallery above the side aisle, opening on the nave. This feature is wholly lacking

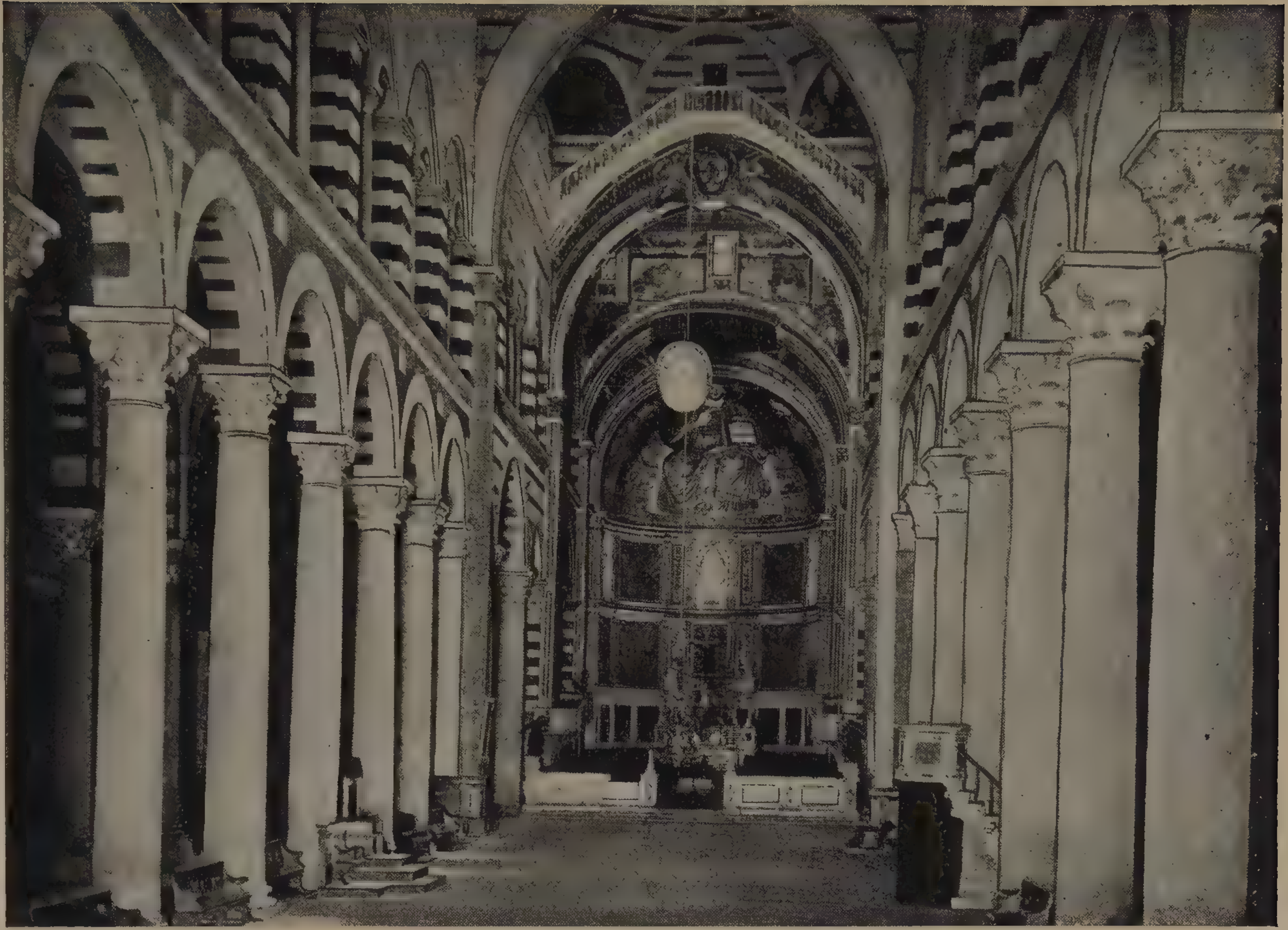

Fig. 88. Pisa. Nave looking East

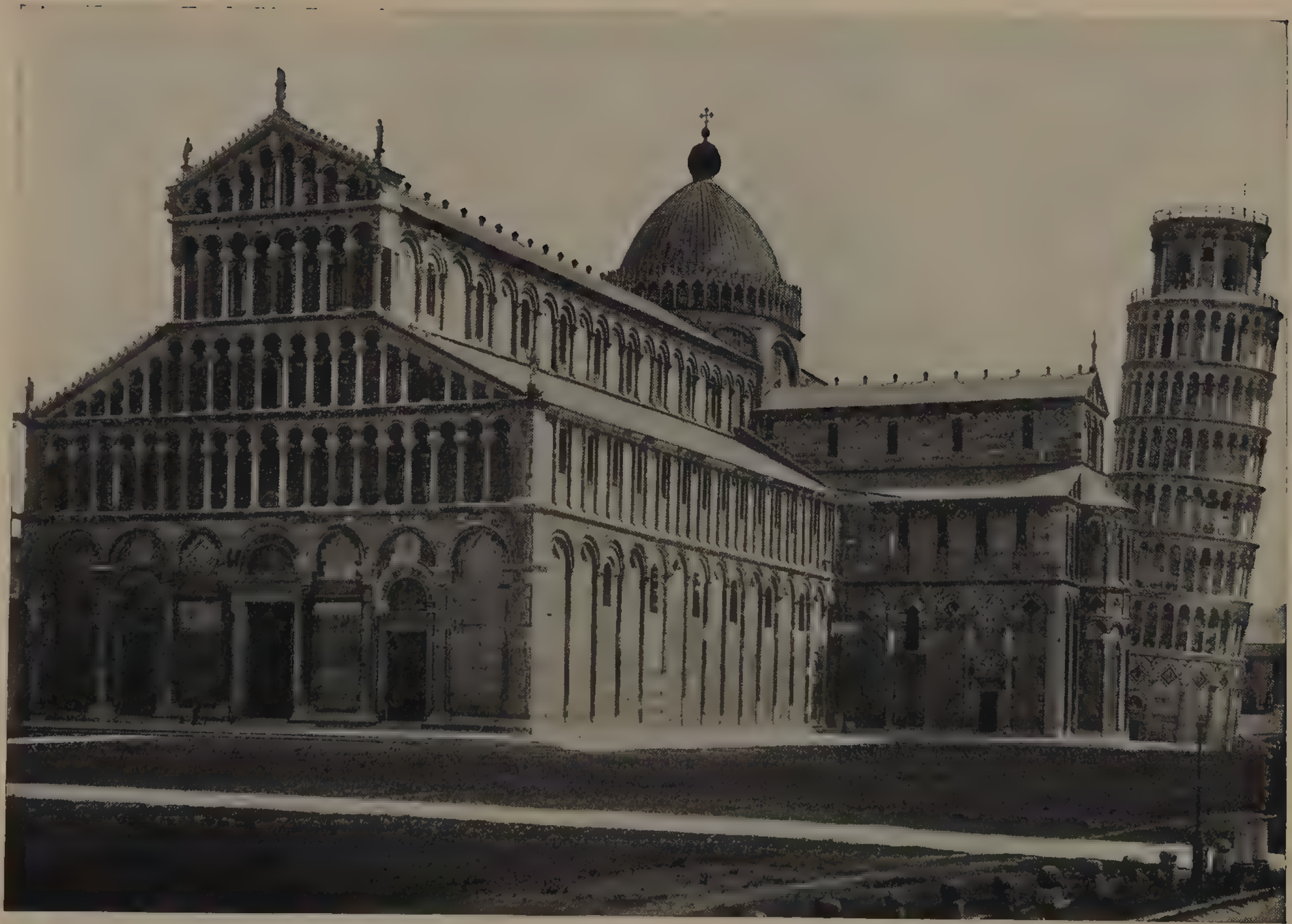

Fig. 89. Pisa. General View

in St. Paul's, though not uncommon in Christian basilicas of the same period, while it is present, though low, in St. Ambrose. Finally, above this high triforium there is a lofty wall and clerestory. On this wall rest the trusses of the timber roof. For spacious splendor the nave of Pisa with its long lines of Corinthian columns, high triforium galleries, walls of banded marble, and many windows, far surpasses the comparatively narrow and depressed interior of the Lombard churches with their few, widely-spread piers, heavy arches, brick walls, crudely wrought stone work, low triforium galleries, and scarcely visible clerestories. On the other hand, as has been shown, the ribbed vaults of St. Ambrose in Milan, supported by a system of compound and alternating piers, and stayed by buttresses, testify to strong, though crude, powers of invention, and point the way that led ultimately to the most logical system of construction, and one of the loveliest decorative styles ever assumed by architecture. Such a building as the church of St. Ambrose is monumental in the strictest sense of the word, because permanent; i. e., fire-proof and rot-proof. The cathedral of Pisa is not in the same sense monumental because it has a timber roof and may again be destroyed by fire as it was partially in 1595, and as St. Paul's was in 1821. Figuratively speaking the great interior of the Pisan church is illumined with the latest light of the last days of classical architecture, while the church of St. Ambrose is dimly lighted by the dawn of the new, the mediæval way of building.

Turning from the constructional side of Pisan Romanesque architecture to the decorative, and looking carefully at the exterior of the lovely church of Pisa (Fig. 89), we must own at once to its originality and its beauty. Here, if ever in art, is made plain how great is the value of repetition while, if anywhere, we may here learn what is meant by that living variation and changefulness of detail which robs repetition of monotony. The two features on which the whole decorative character of this church depend are pilasters joined by arches, and open arcaded galleries. The latter are used across the front and about the eastern apse, while the former serve as wall ornament for the sides of the nave, transepts and choir.

The west front is divided horizontally into five stories. The ground or principal story is occupied by the doorways. These are flanked by attached columns, and are separated from one another by pieces of wall almost equal in width to the doorways themselves. The two extremities of this story, really the angles of the front, are formed each by one of these portions of wall, in a sense piers. Further, the angles are strengthened by broad, boldly projecting pilasters, which give the appearance as well as the reality of strength at the places where strength is most needed. Above the ground story there are tiers of open arcades, narrow galleries in the thickness of the wall itself, fenced in as it were by rows of small columns, used almost like balusters. These small columns are joined together by arches, thus forming arcades. On these arcades, in front, and behind, on the wall itself, rests the floor of the gallery above. There is room to walk between the columns and the wall, i. e., inside the arcades. For this reason such arcades are called "open," by way of distinguishing them from arcades which have their columns attached to the wall (blind arcades), used for purposes of decoration, and structurally as stiffening for walls.

The walls of the nave, transepts and choir on the outside of the cathedral of Pisa are decorated, as well as strengthened, by rows of pilasters. These pilasters are connected by arches which spring from capital to capital. This produces, in principle, a blind arcade, rectangular pilasters supporting the arches instead of segmental shafts as on the front. The use of pilasters, "pilaster strips" so-called, together with open and blind arcades, became constant decorative features of the Romanesque style, going wherever that style went, whether into the French forests, down the Rhine, or across the channel into England.

The other structures of the Pisan group are treated in the same general manner as the cathedral. The baptistery (Fig. 90) and the leaning tower each have their basement stories designed like that of the ground story of the front of the cathedral. The leaning tower is circled by tier upon tier of lofty and very beautiful open arcades. The baptistery as originally designed was like the cathedral and the tower, but it has suffered from changes made in later ages, when some of the superficial characteristics of Gothic were applied to it. The outside of the wall of the Campo Santo is treated with pilaster strips and arches, like those of the cathedral.

The façades of St. Mark's in Venice (Fig. 68), and of the cathedral of Pisa, are noticeable before all else for the great number of columns employed in their constructon and for their decoration. They offer instances of that use of columns which characterized Romanesque design wherever and whenever executed; characteristics which Longfellow remarks in his *Column and Arch*: "In Romanesque the column was everywhere the builder's pet child. As soon as he acquired skill to make them for himself he abandoned the classical stature and made them of various sizes, but chiefly small, reserving them mostly for decorative positions, and leaving his hard work to be done by piers. It seemed that he never could accumulate enough for his desire."

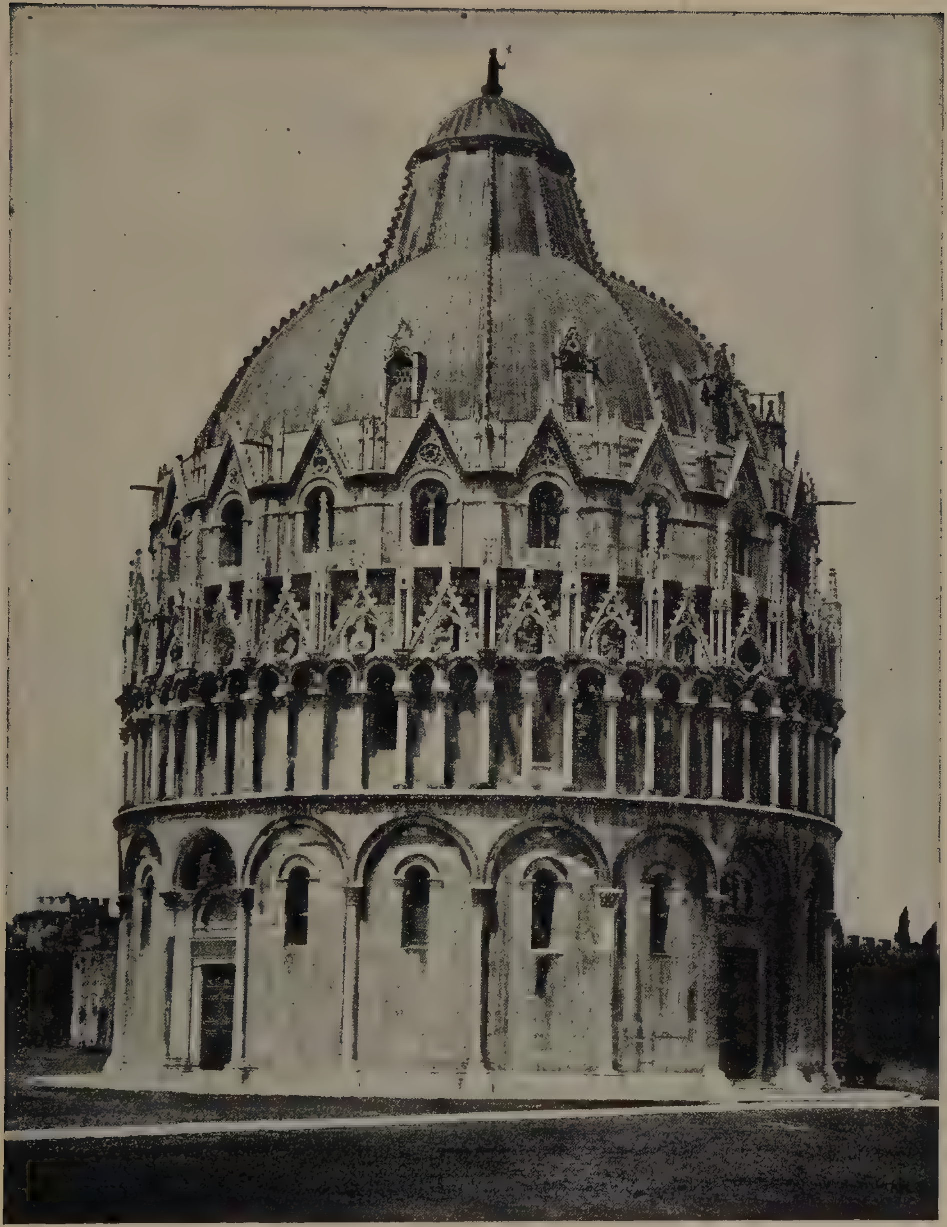

FIG. 90. THE BAPTISTERY OF PISA

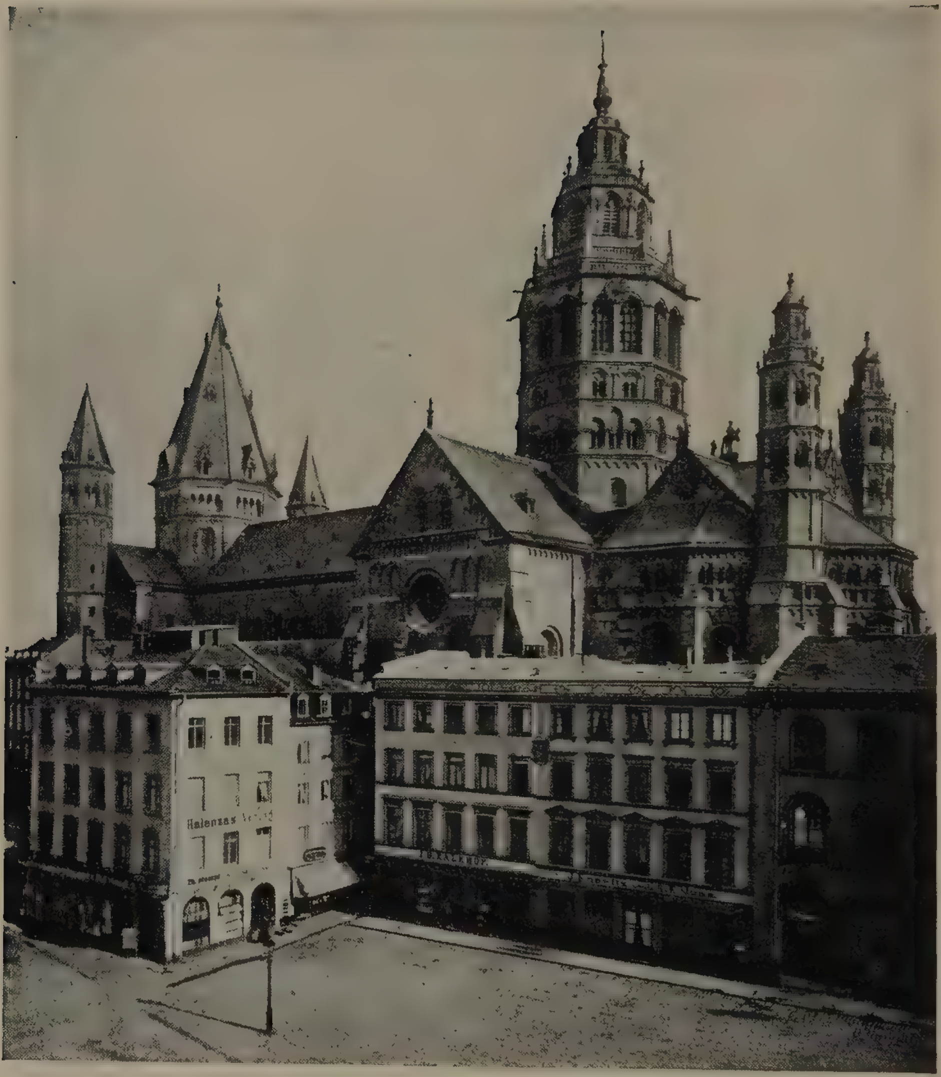

Fig. 91. Mainz. General View

In St. Mark's the hard work—that of supporting domes—was done by piers. But here the style was distinctly Byzantine. In the cathedral of Pisa there was no hard work to be done; no vaults, and so, no piers. But the front of Pisa, as well as its fine apses, and the exteriors of the baptistery, and leaning tower, are almost wholly matters of columnar usage, though wholly unclassical. This work was truly Romanesque.

In the Lombard churches there was much hard work to be done, and it was done by piers. So was there also in the Norman Romanesque of the Abbey for Men at Caen. The Lombard builders to some extent, and the French Norman to a greater extent, made use of columns in a distinctly unclassical manner. In all these forms of Romanesque it is clear that whether there was work to do—vaults to be supported and stayed—or whether there were merely vast wall surfaces to be strengthened and decorated, the methods employed had ceased to be Roman, while it is no less evident that the origins of these same methods were Roman, no matter how strongly affected by Byzantine tradition. In other words, the Romanesque style may be divided into two great classes: that of progressive construction, and that of a decoration in which the elements and manner are debased or modified classical with Byzantine tendencies. Both classes were combined in Norman, and in Lombard, Romanesque. The latter of these classes was alone represented in Pisan Romanesque. In the German Romanesque of the Rhine borders, Rhenish Romanesque, their combination was delightfully practised. The Romanesque of England, immediately following the invasion of William—Norman architecture as it is usually called—was not to any noticeable degree progressive on the side of construction, though it produced many very large and remarkable buildings.

The Rhine has always been the great historical waterway of Europe. In Roman days its stream bore the things of civilization all the way from Constance to the German ocean. Upon its banks the architecture of Rome was early established. Later came Charlemagne with his half Byzantine civilization, the chief existing memorial of which is the minster at Aachen. Later still there developed a close relation between Lombardy and the Rhenish German provinces. Thus Roman, Byzantine and Lombard conceptions of architecture, all of them notable for construction, had been, or were represented along the Rhine, before and during the eleventh century.

The imperial power of Germany was at its height in the reign of Henry III (1039-1056 A. D.). It was during his reign and the reign of Henry IV, which continued until 1106, that the finest of the Rhenish

Romanesque churches were built, notably that of Mainz. After the fire of 1081, which destroyed the

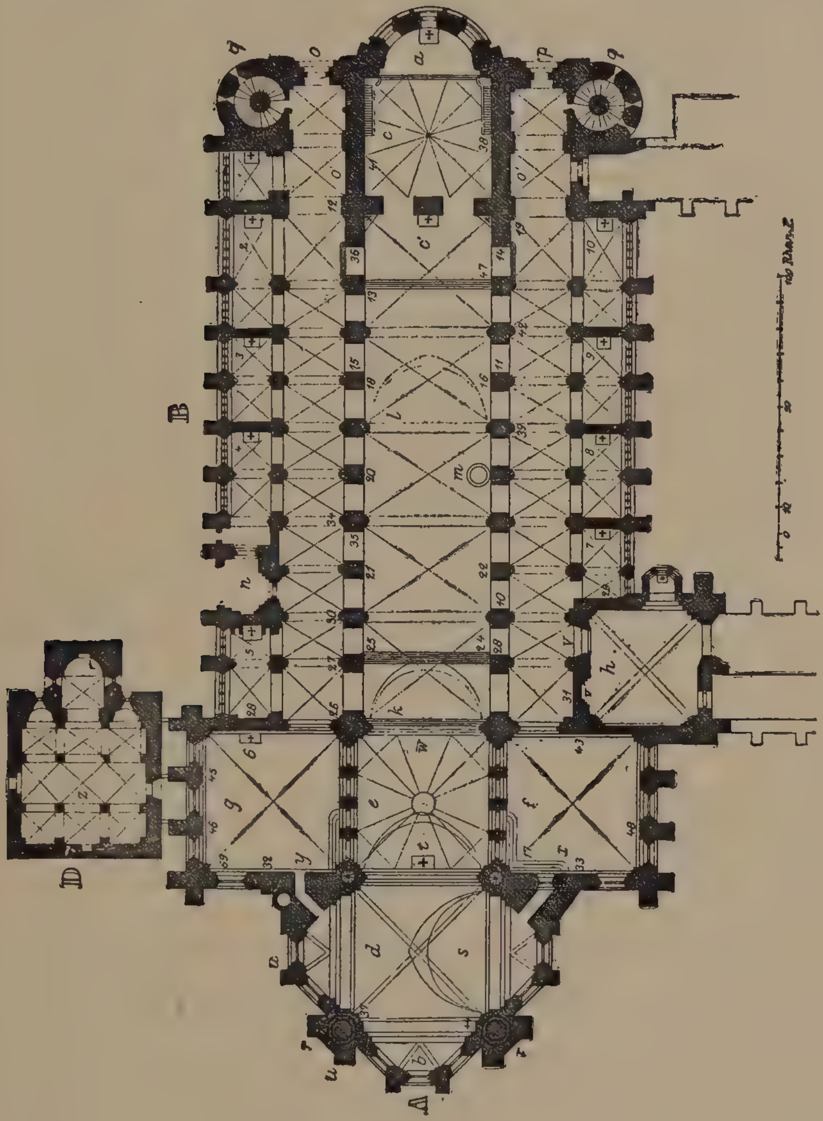

FIG. 92. MAINZ. PLAN

then timber-roofed church of Mainz, the building was reconstructed with vaults of brick and stone, probably the first great completely vaulted edifice of the Romanesque style in Germany. There has been much restoration, and many changes have been made in this building, but the main conception of the present structure is the same as that of the church of Henry IV.

The vaults of Mainz (Fig. 91) are designed in a manner closely resembling those of St. Ambrose; i. e., an independent, though not a complete system of ribs, supports the actual vaulting surfaces. Compound piers and an alternating arrangement of supports further emphasize the likeness between this church, together with many other German Romanesque buildings, and the Romanesque of Lombardy.

The duplication of transepts, one toward the west, and one toward the east end, together with a western as well as an eastern apse, early came to be typical of Rhenish churches. The common form of capital used in Germany at this time was the cubical or cushion capital (Fig. 93), derived through Byzantine channels from Ravenna, Venice, or Constantinople.

It is the exterior (Fig. 91), the appearance of the whole structure of Mainz, that is most characteristic, and is unique. Two octagonal towers, one of them immense, rise above the crossings of the nave and transepts. More slender towers, of similar design but not so high, flank the eastern transept, and the western apse. The various stages of these towers, together with the walls of the nave, of the gigantic west apse, and the fronts of the transepts, are treated with open and blind arcades, pilaster strips, and richly bracketed or corbeled cornices underneath the gable moldings. The jambs of the doors and windows are constructed in different planes with corresponding archivolts, multiplication of members being here distinctly characteristic of the style. It is hard to conceive of anything more interesting or picturesque than the huge brick mass of Mainz, with its lofty and varied towers and steep gables, rising above the roofs of the city and dominating the landscape and the river far and near. Nowhere other than in the pleasant cities of the Rhine

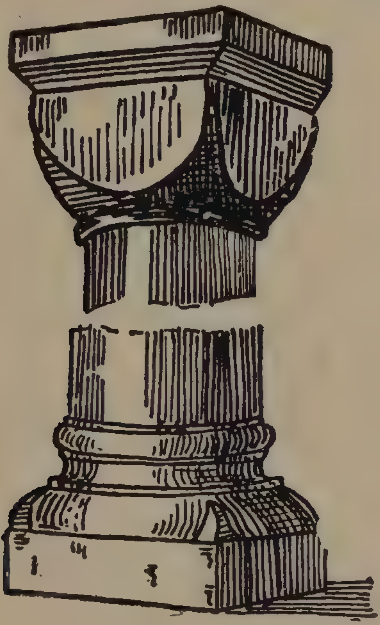

Fig. 93. Cubical Capital

are such buildings to be seen. They are wonderful monuments—extraordinary for height, length, ponderous bulk and rich simplicity—to the rulers of a nation that regarded itself on one hand as a divine institution and on the other as heir of the Roman Empire.

From the days of St. Augustine there had been a cathedral and a monastery church at Canterbury in England. The town has always been one of notable importance in the ecclesiastical world. During the troubled times of the Conquest the church was completely destroyed. Lanfranc, the first archbishop after the Conquest (1070-1089) built extensively, and his successor, Anselm (1089-1109), tore down and rebuilt the east end of Lanfranc's church in the so-called "Norman" style—a style in many respects resembling the Romanesque of Normandy, particularly that of the Abbey for Men at Caen. In the crypt of Canterbury, and in the transepts and towers of Anselm's time (Fig. 94), and in many parts of the neighboring walls, there is much fine Norman work still to be seen. It is characterized by heavy piers, cubical capitals, plain or simply cut in flutings, round arches, and archivolts in several layers, often decorated with highly effective, but crudely worked moldings—hatchet work, so-called, tooth, star and zigzag patterns prevailing. The out-

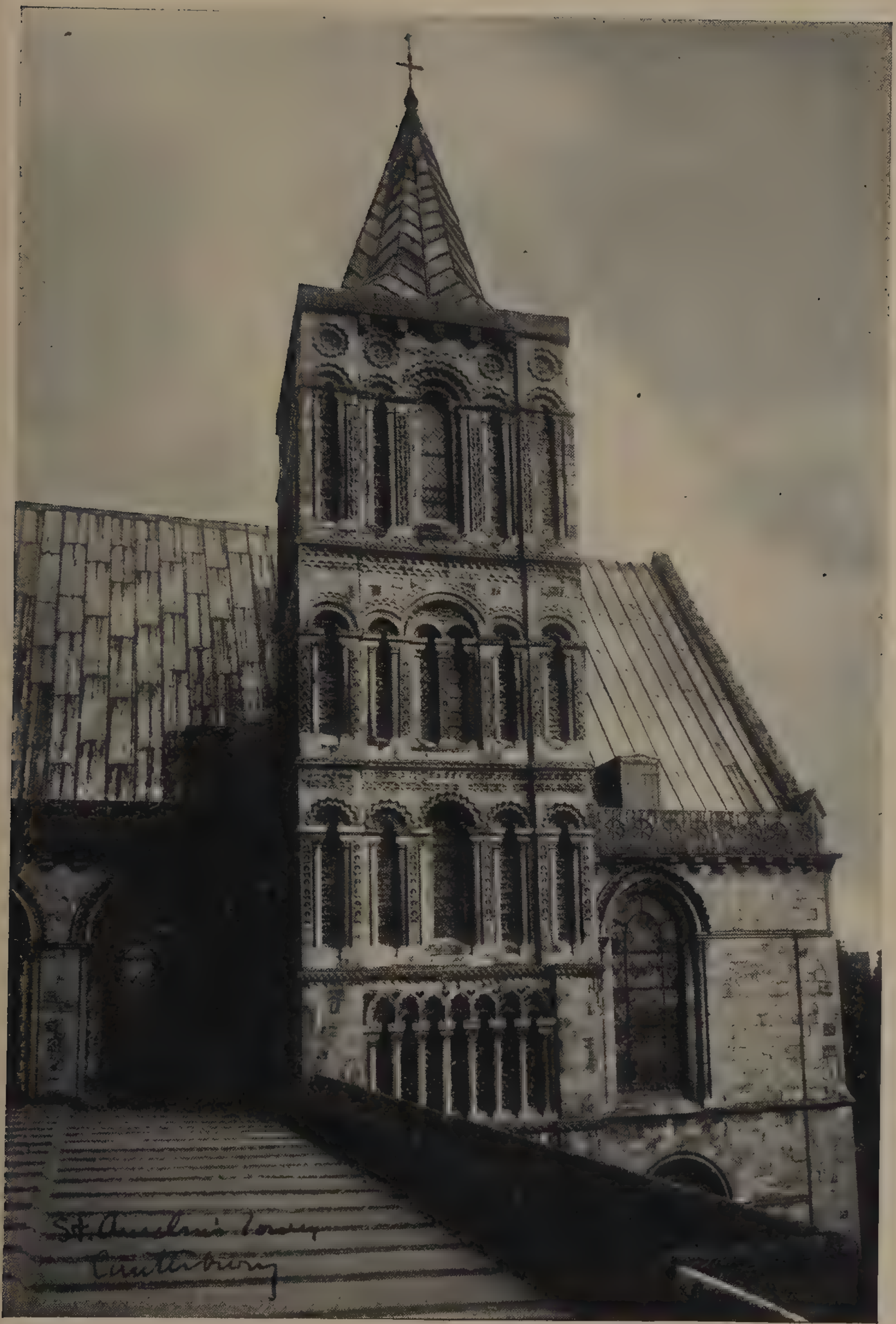

FIG. 94. CANTERBURY. ST. ANSELM'S TOWER

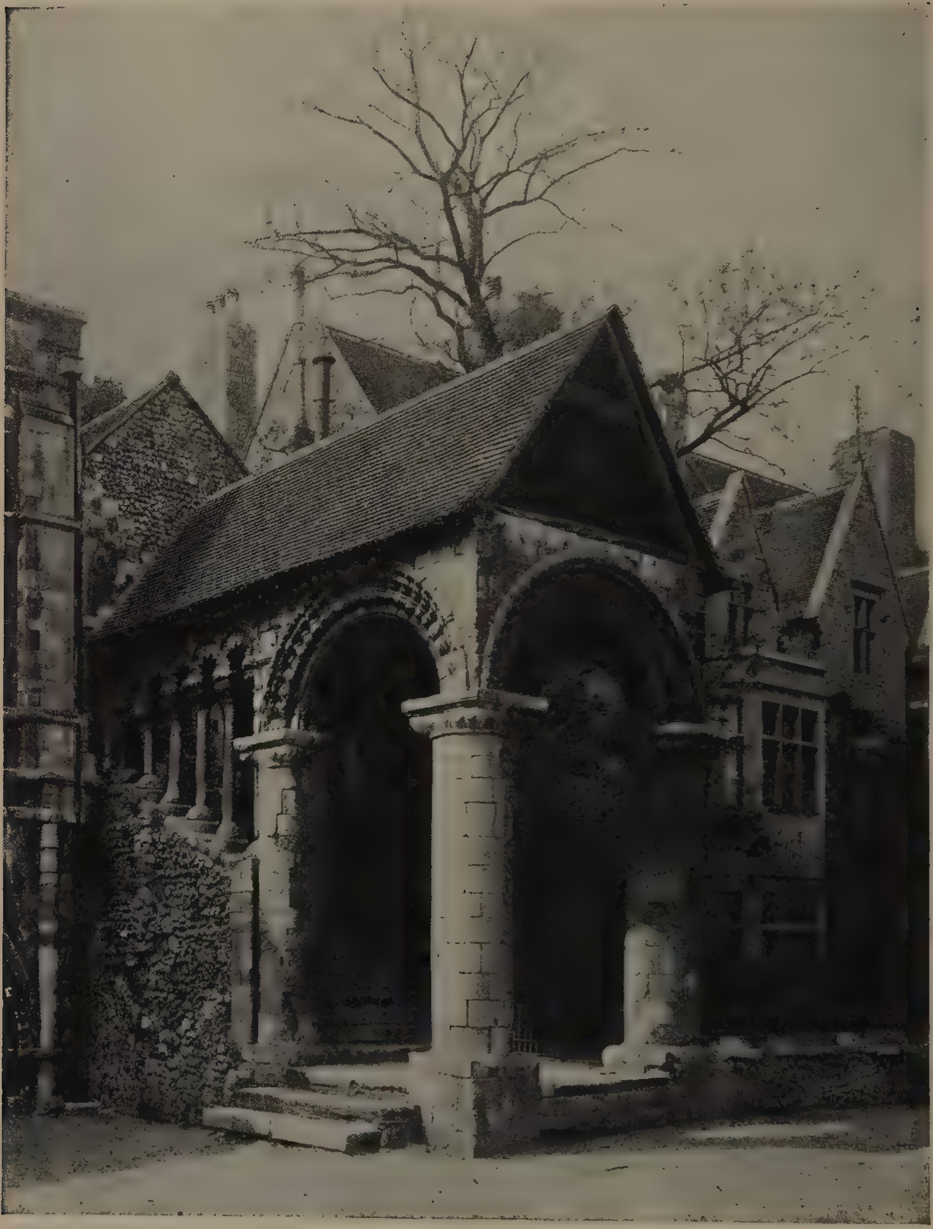

FIG. 95. CANTERBURY. OUTSIDE STAIRCASE

side staircase (Fig. 95), leading up to a hall in the cathedral precincts, is the only construction of its sort, a work pure Norman in every detail, of much elegance, and unique interest, heavier, and in a way, more characteristically Norman than the almost exquisite and unquestionably lovely work on St. Anselm's tower referred to above.

The vast and lofty nave of the cathedral of Ely (Fig. 96) is Norman throughout and offers as good an illustration as can be had of the dignified and severe character of such an interior. The whole height is divided into three parts, a ground arcade opening upon the side aisles; a lofty triforium gallery above the side aisles; higher still, the clerestory. The construction is extremely massive and very simple. Although the roof is timber the walls and piers are strong enough to support vaults. In some Norman churches, the nave of Gloucester, for example, vaults were constructed at a later time. The piers of Ely are compounded of many shafts, from which many-membered arches rise in long succession, tier above tier, throughout the stories of the building. The piers of Gloucester cathedral, an earlier building, are circular in section and of great diameter. The faces of the piers in the nave of Ely have each an engaged shaft which rises from the pavement through all three stories. These were originally intended to support the main beams of the roof. The side aisles are roofed with intersecting vaults, separated from one another by heavy round arch ribs set at right angles to the length of the building.

St. John's chapel (c. 1080) in the tower of London (Fig. 97) is a striking example of early Norman architecture in England. It is roofed with round barrel vaults. Plainer and more solid it is not conceivable that architecture can be. Sir Walter Scott describes perfectly the typical early Norman work.

> "In Norman strength, that abbey frown'd
> With massive arches broad and round,
> That rose alternate row on row
> On ponderous columns, short and low."

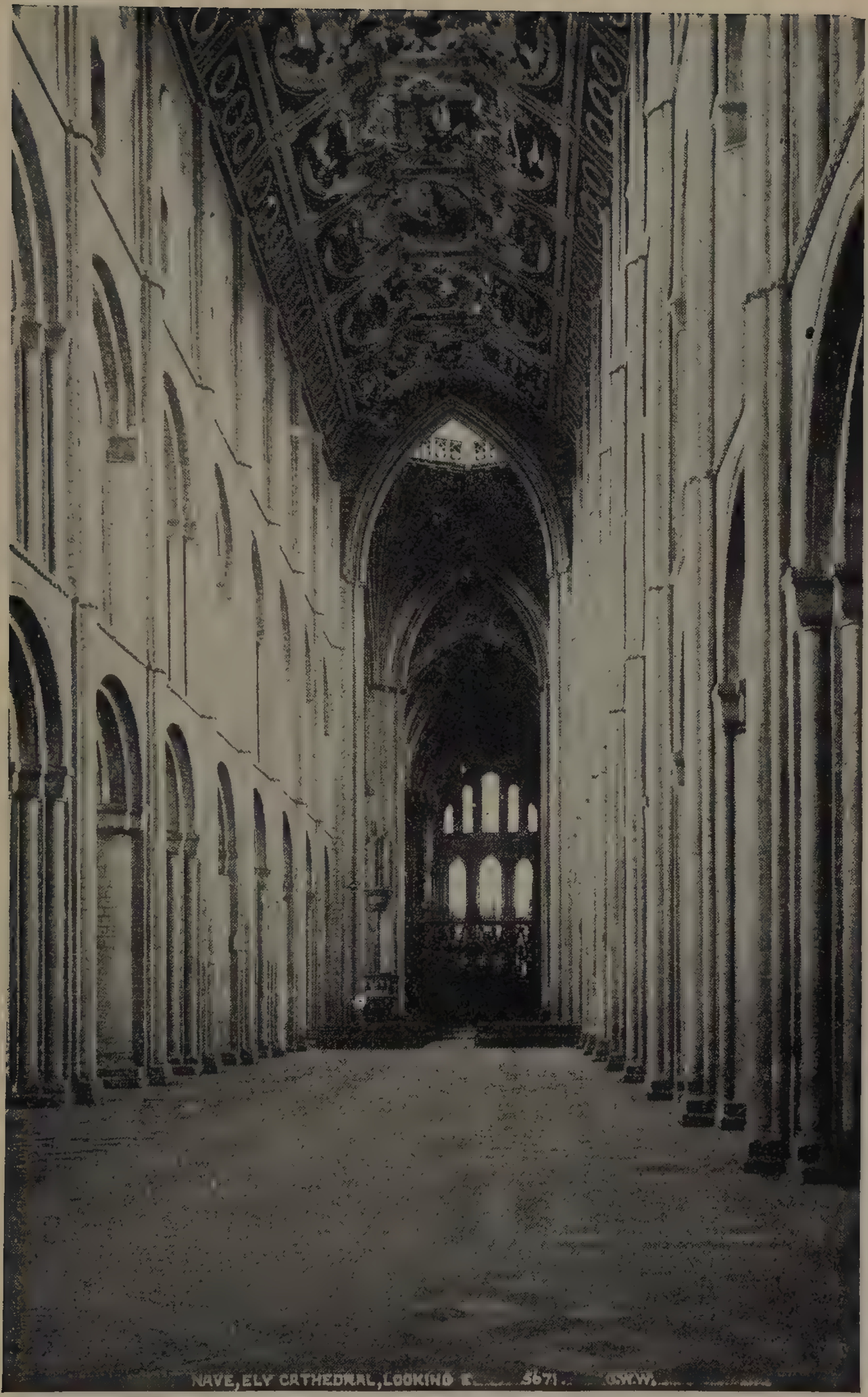

Fig. 96. Ely. Nave, looking East

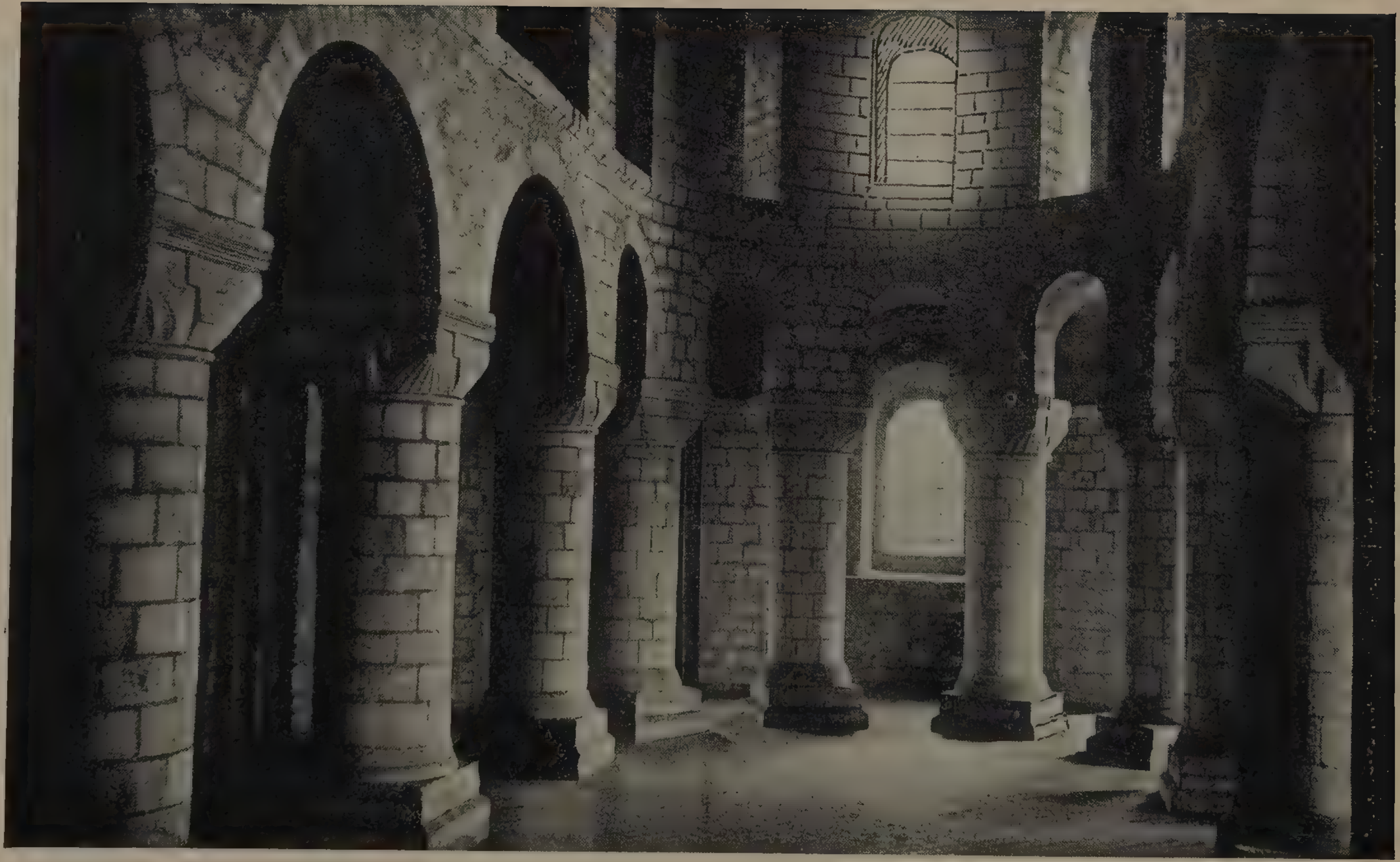

Fig. 97. St. John's Chapel, Tower of London

CHAPTER VIII

ROMANESQUE SCULPTURE

Late classic sculpture was marked by a striving after deceptive imitation of nature. It often attained to a specious sort of realism. Whether the acanthus leaves and slender tendrils which wreathe a Corinthian capital, or the powerful muscles of a dying Gaul were cut in marble, a single conscious aim seems to have guided the artist's hand, and to have possessed his mind. That aim was to make his work look natural. It is not the highest aim of art in all respects, as has been shown in connection with Greek sculpture. In Greek sculpture the artist sought to embody his conception of the meaning of his subject—whether taken from humanity, or from the animal or vegetable world—in the recognizable terms of nature. At the same time he did not forget that art can never do more than represent a few facts of nature, although its god-like prerogative it is to represent those facts in such fashion as shall make them, however commonplace and prosaic, appear in their true character of eternal freshness, beautiful or awful, as the case may demand. Again, an artist of the first rank never forgets that his completed work—no matter whether the terms of his expression are, as in the Parthenon frieze, the bodies of men and animals, or leaves and tendrils as on a Corinthian capital—must produce an effect of agreeable design, i. e., the parts of which the whole is composed, the terms of artistic expression, must be so arranged as to produce a sense of proportion among those parts, and the spaces between them; a harmony as well as a varied repetition of elements and ideas. Finally, no first-rate artist ever disregards the essential character of the place which his work is to occupy; the purpose of the work considered wholly apart from the work itself; the quality of the material, and the sort of tools to be used.

The life of art is spent in three ages. The first—a long one—is that in which men are chiefly concerned with the expression of thought; a period during which ideas to be expressed constantly outstrip the powers, the extreme limits of plastic and graphic expression. It is an age of incessant effort on the manual side of art. It deals largely with problems of technique. It is a time of deeply sincere purpose.

The second age—a brief one—is that in which the technique of art attains approximate perfection. The artist has a complete understanding of all that can be done with tools and materials. He no longer has any manual problems to solve. He is in absolute command of the physical side of his art. Ideas in this second age, the prime of art, must still, as in the first, necessarily outstrip the utmost resource of plastic or graphic expression.

Art that has not more to express than its powers of expression can compass must be inferior. Yet such art may amaze its patrons and hold great audiences. The beauty of it is often undeniable. Such art is of the third and last age, a long one but unlike the first, waning, where the former was waxing in power to conceive important ideas and in power to utter them. In the last age the artist's chief thought is given to the manner of presentation; his second and diminishingly interested thought to his subject and its general or special bearings.

At first imperfect technical processes hinder the artist. He chafes incessantly with the physical limitations set upon the means, material and tools, by which he is to make his ideas known. His constant aim is to lessen these limitations, in other words to better his technique. Then comes a time when he has attained the fulfilment of this aim. With a developed technique at his fingers' ends he can let himself go out wholly to his subject, manipulating his tools and his materials with the same degree of unconscious, yet governed freedom, as the man who speaks and writes in a language that is *really* his own. It is this age of art which produces the greatest things, those that are most beautiful, for the reason that under such conditions the artist's powers of expression approach most nearly to an equality with his powers of imagination. The danger of this age appears when its weaker men, and the men of the succeeding time, taking the great works as models of final perfection, formulate rules for the conduct of art; rules based for the most part on the technical methods and individual peculiarities of the great works, neglecting, in the feebleness of their own imagination, that which is the source of art—intellectual and emotional conceptions—which are got only of nature and man's imagining. This is the last age, that of decline, and in the end, decay.

To return to Imperial Roman sculpture and its far-descended offspring, Romanesque:—the exquisite technique, the delightful artificiality of so much of the sculpture of the Empire, the petty imitativeness of its acanthus foliage, the deceptive likeness to reality in so much of its marble flesh, or the still more deceptive appearance of texture given to its marble draperies—softness, stiffness, lightness, or heaviness—all these are the earmarks of an age that concerned itself more with form than matter; more with the forms of expression than the substance of ideas.

If we compare Roman Corinthian foliage (Fig. 18) with similar foliate ornament in the best Greek work (Fig. 38) or if we compare the Ionic capitals of the Erechtheum (Fig. 15) with those from the Roman Forum (Fig. 18), we see particular examples of a very general truth. We see concretely the truth of the statement that Roman sculpture of the early Empire, compared with Athenian Greek sculpture of the fifth century B. C., is unthoughtful, unimaginative, uninspired, and so, uninspiring. This is largely due to a uniformity of conception and technique which is expressive of the all-absorbing pursuit of mechanical perfection, and gorgeous display, which was typically Roman as compared with that love of various beauty and intense restraint, which was Greek. Athens and Rome each passed through the long age of artistic development, and each came to its age of greatness, but the greatness of the one differed from that of the other as much, if not more, in the sort of tasks set for accomplishment, as in their respective ways of accomplishing the tasks. In the end each had its age of decline. From the work of the age of Roman decline Romanesque sculpture finally evolved. In other words, the Lombards laid the foundations of a new school on the few, shattered, out-worn traditions of Roman sculpture, and on the wretched carvings—meager in thought and poor in manner—produced during the eighth and ninth centuries. As with their architecture, so with their sculpture; the Lombards inherited from

Rome; were influenced by Constantinople; and thought for themselves. And what was true of Lombard sculpture was also true, in varying degrees, of all the other varieties of Romanesque sculpture.

The foliate decoration of the capitals from the doorway of St. Michael's in Pavia (Fig. 71) recalls the Roman Corinthian type in a remote way, while the square shape, and particularly the thick abacus blocks, suggest the Byzantine capital. On examining the cutting and design of the leafage of these capitals it will be found clumsy, and inferior technically and imaginatively to that of a Corinthian capital of the Imperial age. The foliate scroll bands on the archivolts are distinctly Byzantine in design and in the manner of Byzantine surface cutting. It is just such decoration as was used again and again in Constantinople and at Ravenna, only done more crudely. More characteristic still of Romanesque, more Byzantine in appearance and far less classical or Corinthian in form and detail, are the capitals of St. Ambrose in Milan (Fig. 76 and Fig. 77).

The stone pulpit of St. Ambrose in Milan (Fig. 98), a work of the eleventh century, is a notable example of the design of that age.

The upper bas-relief, showing persons seated at a table, is probably meant for a Last Supper; possibly a feast in Cana; by some it is believed to be one of those

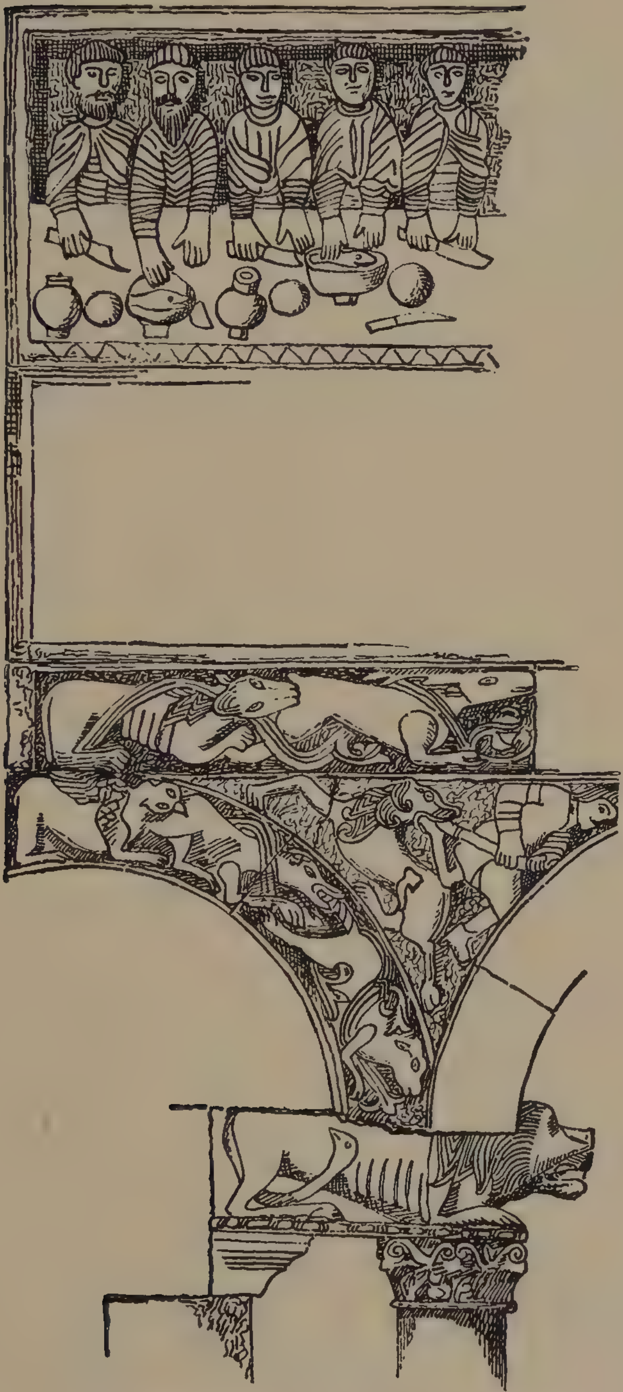

Fig. 98. Detail from the Pulpit of St. Ambrose, Milan

strange early "love feasts." At any rate, as a piece of composition and as an example of bas-relief sculpture it is childish. The figures are awkward, while the expressionless faces, rigid draperies and scattered table utensils, are in no way related to one another, as parts going to make up a single or unified composition. These things—the elements or constituent parts of the design—of themselves unnatural and unlovely, are not, as is sometimes the case with such elements, combined in a manner to produce an agreeable sense of spacing and arrangement of spots, or a rhythmical and close-knit disposition of parts. In different words, it is possible to have a beautiful design made up of individual parts or elements not in themselves beautiful. There are bits of such design on the archivolts, the band just above the archivolts, and in the triangular space between the archivolts, of this same pulpit. Notice how the animals biting one another's flanks, or swallowing one another's tails, are fitted without crowding, so as to fill the space allotted to them; how they are bound together with scrolls and leaves so as to lead the eye around the unbroken arch with an agreeable succession of related objects and proportionate spaces; note how man and demon fighting in the triangle below occupy their field, filling it, without confusion or crowding. With these qualities, and they are the important qualities of good design in any age,

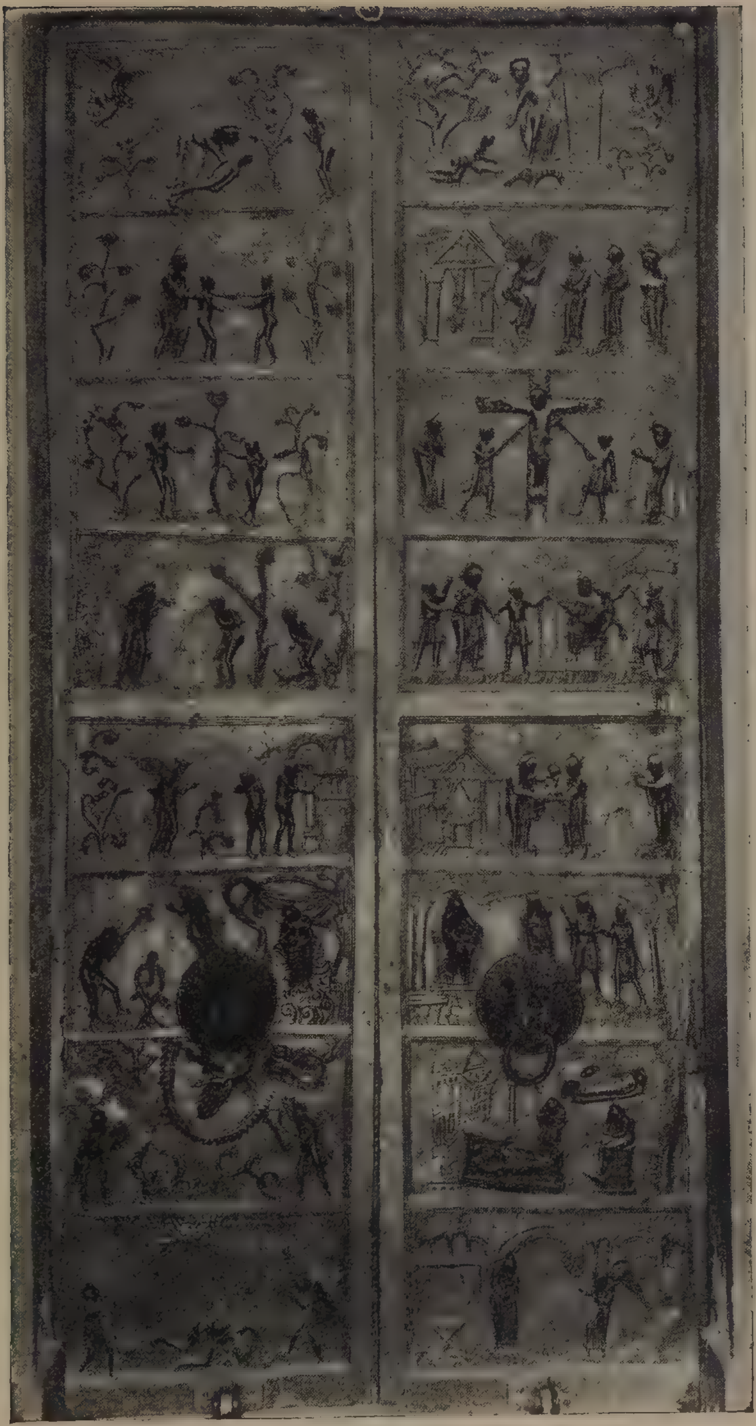

FIG. 99. BRONZE DOOR, HILDESHEIM

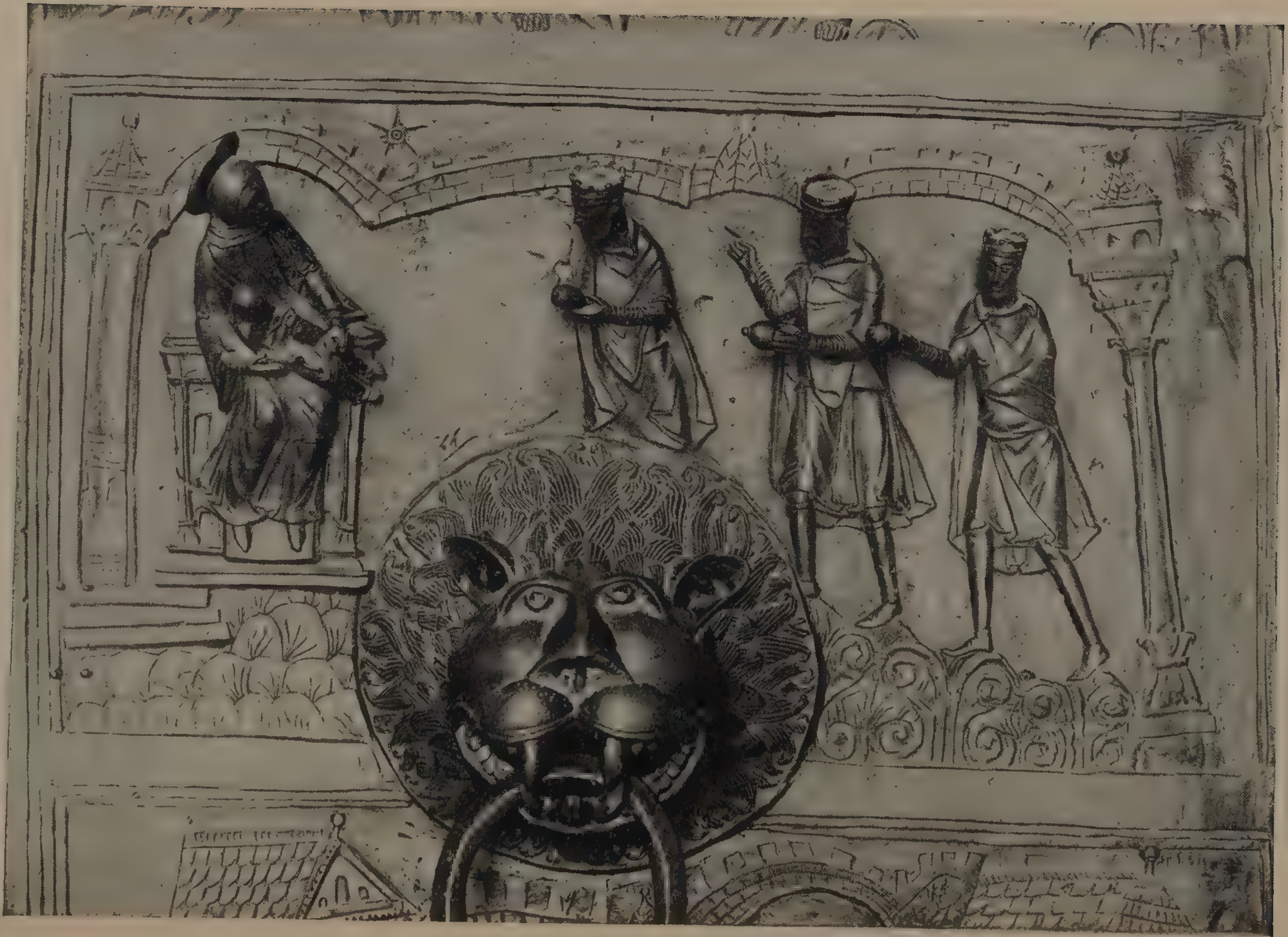

FIG. 100.

DETAIL FROM BRONZE DOOR, HILDESHEIM

mark the absurd character, the unnatural and awkward drawing and modeling of the individual elements, men and animals. It is analogous to much early Greek work; to many an early Greek vase painting (Fig. 35), in which the design or pattern is charming because of the delightful arrangement of the parts, and spaces in which the parts are set, although those parts, often human beings, are *per se* ridiculous, and far less natural even than the similar parts of the design under discussion. Wherever there is good design, that is, a good arrangement of the parts which go to make up the whole of a work of art, it is proof that there were judgment and sensitive feeling in the artist's mind and heart, though the terms of his expression be as crude as those of the St. Ambrose pulpit. Such art lacks technical excellence, but it is vital art none the less. Being vital it is alive, and being alive it must grow and develop. It is childlike. It is not childish. Imagination brings it forth. Effort and reason are its nurses. Its majority is attained when pleasant, lovely, natural forms or elements take the place of absurd and crude ones, and when the arrangement of those elements is still as good or better than formerly; when in fine the whole and the least parts of a design are capable of giving pleasure to intelligent, discriminative, sensitive human beings.

The design of early Greek vase paintings, and these designs of the bas-reliefs of the Milanese pulpit are both works of the youth of art, of its first age. The frieze of the Parthenon (Fig. 25) and the bas-reliefs above the door of the cathedral of Paris (Fig. 143), are works of the second age of art, of its majority. The latter works are to the former as man to child, and so in general was fifth century Greek art to sixth; and so in general was Romanesque, notably Lombard Romanesque art, to fully developed Gothic of the thirteenth century.

Finally, the Lombard artists, untrained in head and hand, but powerfully imaginative, in an age of limited material resources and slight technical knowledge, were men who devised practical and far-reaching, though tentative, solutions of the great problem of vault building, and revitalized and set in the way of progress the then almost defunct art of sculpture.

Romanesque sculpture throughout Europe had the same general characteristics, crudity of conception and execution. In much of it there is a clearly traceable influence derived from Roman sculpture, this especially in regions where Roman civilization was most firmly planted, or lasted longest, as in the south of France. The Byzantine influence is, on the other hand, clearly marked in some of the best German Romanesque sculpture. In northern and central France during the century after the Conquest the Roman and Byzantine in-

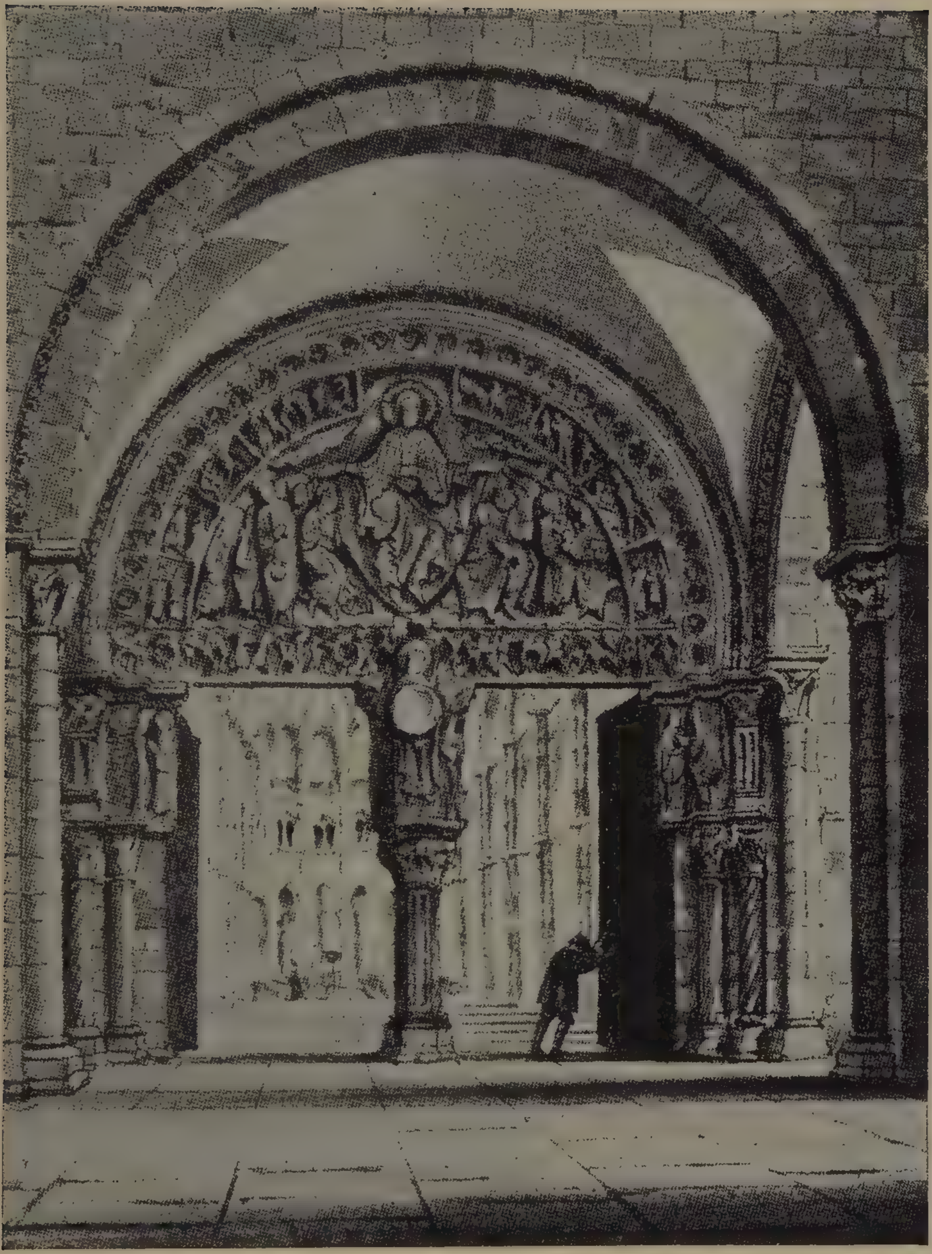

Fig. 101. VEZELAY. ENTRANCE TO THE INNER CHURCH

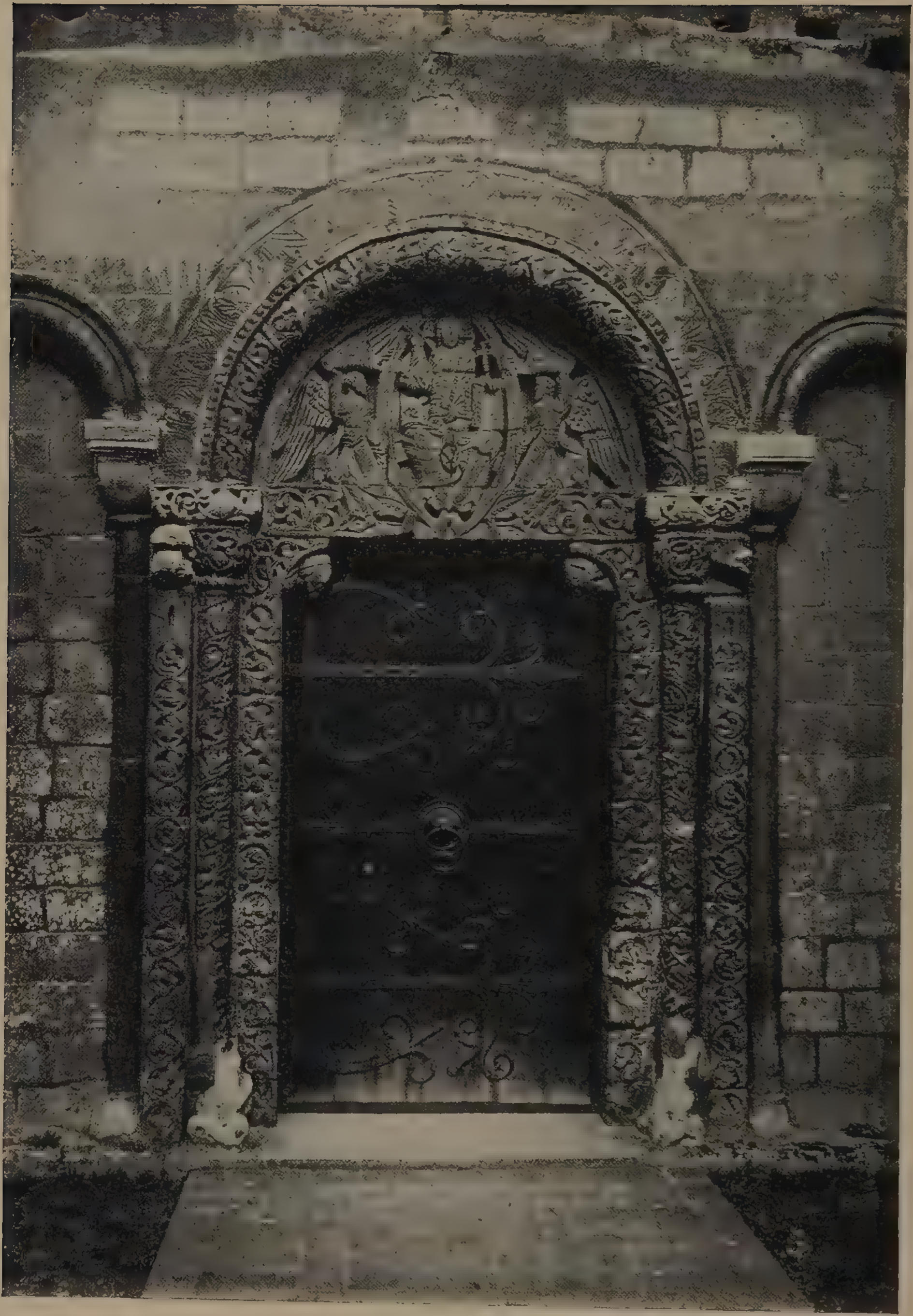

Fig. 102. ELY. PRIOR'S GATE

fluence is less clearly traceable, while the peculiar individuality of artists or localities often lends a charm or interest quite unique.

The finest Romanesque sculpture was bronze. Even in the days of Charlemagne there was a foundry at Aachen, and later bronze casting was practised at Mainz, and especially at Hildesheim. The cathedral of Hildesheim had a bronze door (Fig. 99) made in 1015. The two valves of this door together contained sixteen Biblical scenes in bas-relief; the left valve dealing with the Old, and the right, with the New Testament. The figures, though by no means lifelike (Fig. 100), might be much worse. The draperies are composed so as to seem really to clothe the figures which they cover. The gestures are expressive, and the way in which the Virgin holds the Child is distinctly true to nature. But the architecture and foliage, if regarded as other than pure conventions, are absurd.

An important step in the way of betterment was taken by the Romanesque sculptors of Cluny. It consisted in a direct and first-hand study of nature; in close and careful observation of the model. However, with the sculptors of Cluny, interest in the model appears to have ceased with the head and features, and it was long before signs of an equal interest in human bodies, draperies, or animals and foliage appeared. Individual character and expression began, with the work of Cluny, to show in the faces of many a sculptured saint standing guard beside his cathedral door, or carved above it on the archivolts, or in the tympanum (arch surface over the door); such for example as are yet to be seen in the Abbey Church of Vezelay (Fig. 101).

Vital sculpture was beginning to replace lifeless. The cause of this new life lay in a new-born regard for nature as the only true model and source of inspiration for the artist. From Cluny, out of Burgundy, this influence spread, and out of it ultimately came French thirteenth century Gothic sculpture, which, at its best, attained an excellence equal to that of Greek sculpture, but along different lines.

England, in sculpture, learned little or nothing from the Normans. That which was produced was of an exceedingly rude character, and remarkable chiefly for its want of expression. The inferiority of the English to the French work during the Romanesque period is amazing. The Prior's Gateway at Ely (Fig. 102) offers a typical example of English sculpture at this time. It is child's play beside contemporary French work.

CHAPTER IX

GOTHIC ARCHITECTURE

Only periods of unusual intellectual activity, of religious and civic enthusiasm, have given birth to architectural styles. Gothic architecture is an impressive and faithful expression of the religious stir of the age of St. Louis and St. Francis, of the zeal for crusading, of the might of imagination which found utterance, south of the Alps in the *Divine Comedy,* and north of the Alps in cathedral churches. Gothic architecture, together with the allied arts of the Gothic age, is the fit reminder, the wonderful and beautiful memorial, of the period that bore Dante, and earlier set on foot the most romantic movement that ever induced men to leave home and renounce life freely—the crusades. The Gothic churches are the enduring monuments of religious zeal, of communal independence, and new-gained freedom. As works of art they are incontestable evidence of the daring and skill of their builders, and the intense love of beauty which was an unfailing characteristic of the minds of those builders. Emerson said that Dante was all wings, pure imagination, and wrote like Euclid. It is truth uttered on the borders of inspiration. To Gothic architecture this comment is equally applicable. The architects of the cathedrals of Paris and Amiens, Chartres and Beauvais, were likewise all wings, pure imagination, and they built like Euclid. To think beautifully about the church triumphant, and to think concretely, as if it actually existed and was to be seen of human eyes, required only a finer sort of vision, a sort typical of the Gothic age. To give a concrete form, in permanent materials, to such thinking; to give the church militant an adequate and sufficiently lovely house; to build with hands, as far as might be, worthily, some suggestion of what was not built with hands, eternal in the heavens; to do some such thing as this was allotted to the latter part of the Middle Ages—before all, to Frenchmen.

Louis VII came to the French throne in 1137. It was during his reign and the reigns of his successors, Philip Augustus, Louis VIII and Louis IX (St. Louis) who died in 1270 A. D., that almost every great Gothic church in France was begun. Within that period they grew, with few exceptions, to the stature and likeness by which we know them to-day.

The second half of the twelfth century witnessed the undermining of the feudal system. The first half of the thirteenth saw the strength of the French monarchy established. It was the king who first com-

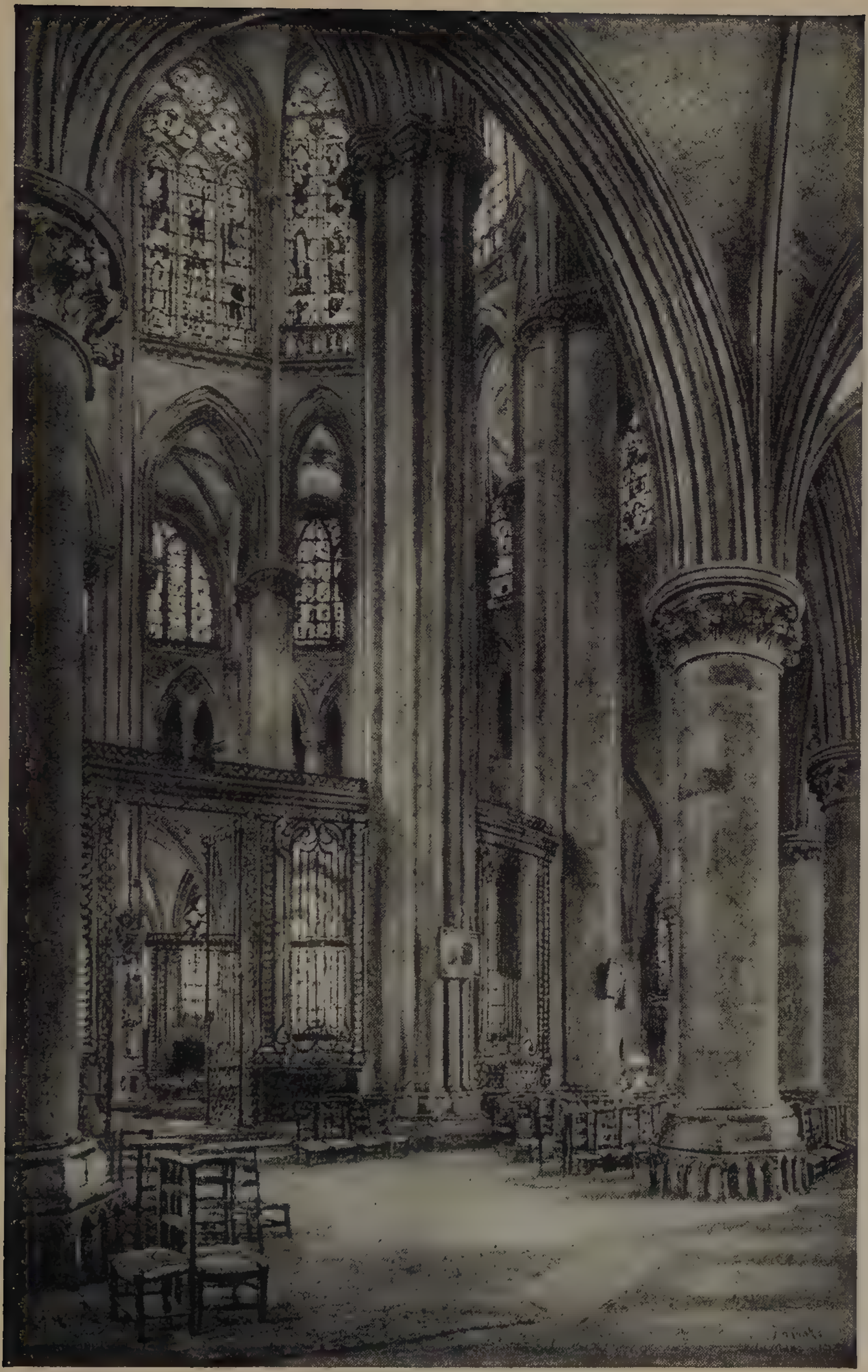

FIG. 103. LE MANS. THE APSE (*after Rooke*).

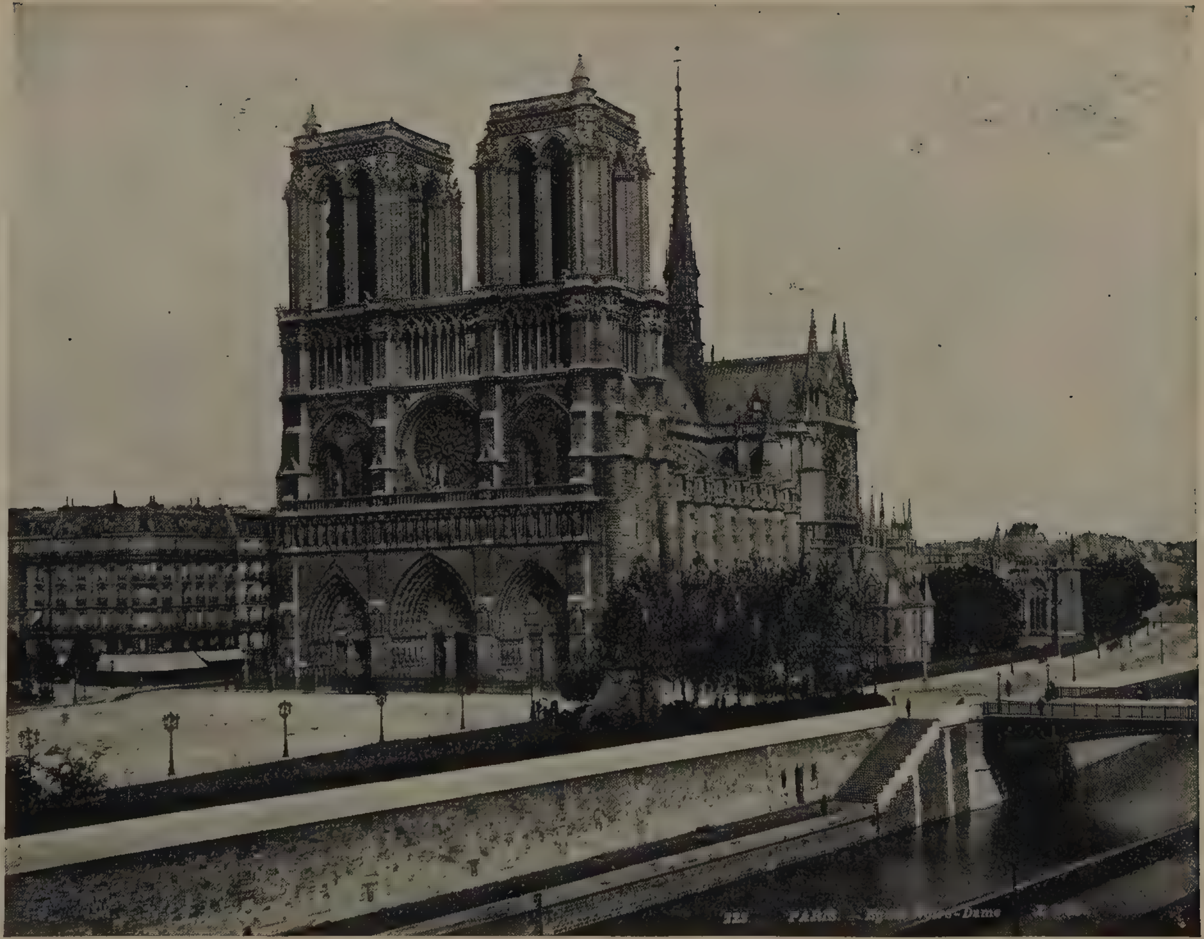

Fig. 104. Cathedral of Paris, Notre-Dame, General View

bated the feudal lords, often joining forces with the bishops. The people, seeing an opportunity to better their conditions, soon came into the same party. The result was the downfall of feudalism. The people acquired rights and established communes. The bishops took precedence of the abbots. The king's authority was increased and the royal domain enlarged.

Naturally the people came to look upon the bishops as their leaders, political as well as spiritual. The bishops, as might be expected, wished to give visible expression to their new-gained supremacy, at the same time feeling it to be the part of prudence to make open and public acknowledgment of the political rights of their supporters—the people. The strength of monasticism, of the abbots, manifested itself in vast abbey churches such as Cluny. The cathedrals—a bishop's church is a cathedral—were small, and in many ways inferior.

The new cathedral[15] of the thirteenth century was the exponent of the change in religious, political and social conditions which developed with the decline of feudalism. The cathedral was largely the work of the laity, the pride of every soul in the commune in which it stood. It served purposes religious and secular—a great hall in which an entire population might gather about the bishop's throne either for acts of worship or the transaction of communal business. It was town house and House of God in one. Viollet-le-Duc remarks that, "At the close of the twelfth century the building of the cathedral was an absolute necessity; it was the avowed protest against feudalism."

Never was the spirit of architecture more patriotic or national than when it exhibited itself in the French Gothic cathedrals. Each one was the index of the freedom and wealth, as well as the political power and religious zeal, of the town in which it rose. It is not a matter for wonder that the bishops' propositions to rebuild their churches, vast and beautiful; to make them eclipse the abbeys; to cause them to be universally acknowledged symbols of the dawn of a new freedom after the night of feudalism—no wonder if such propositions were received and acted on with a veritable storm of enthusiasm; no wonder that men vied with one another in generosity and sacrifice; that bishops labored, and kings gave. A contemporaneous verse from an account of the building of Chartres is to the point.

"Of jewels, monies, and possessions
In truth they gave
Each man according to his property."

These cathedrals, says Viollet-le-Duc, are "the foundations of our national unity. They came into being with the nation. Among them the cathedral of

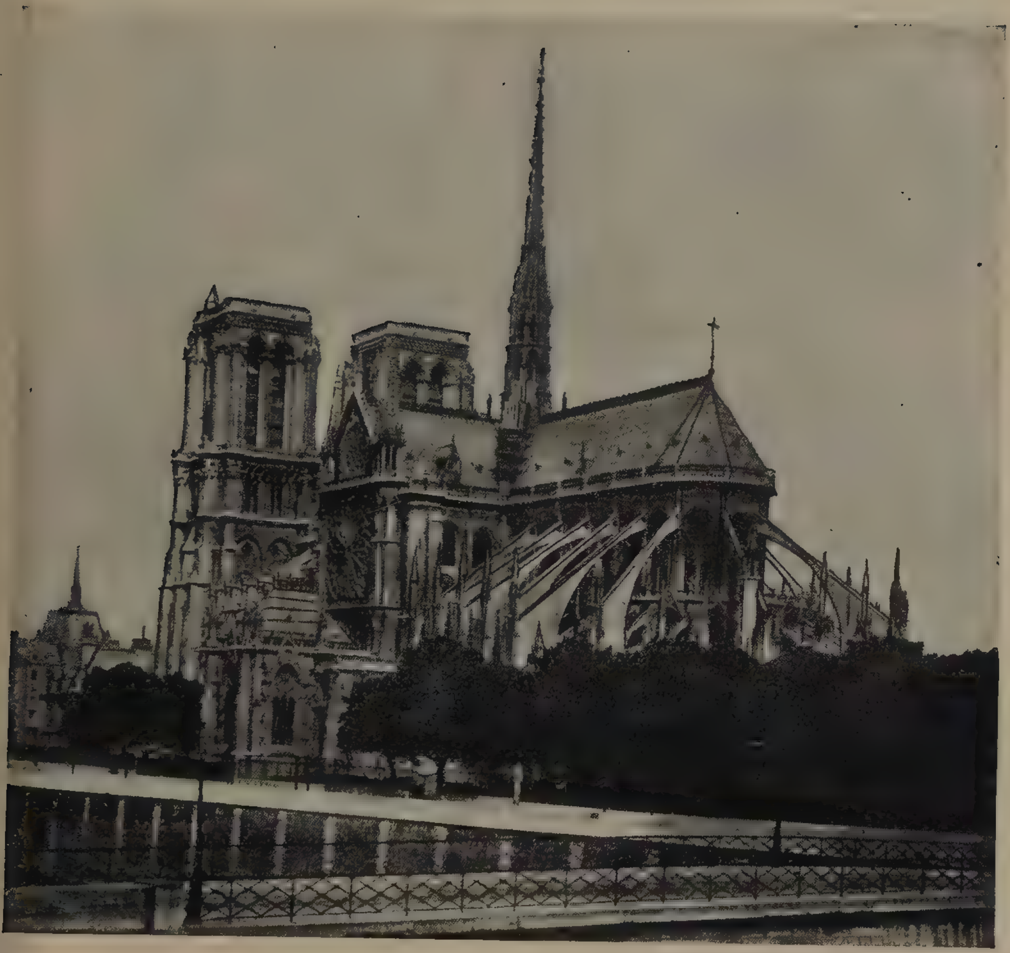

FIG. 105. CATHEDRAL OF PARIS, FROM EAST

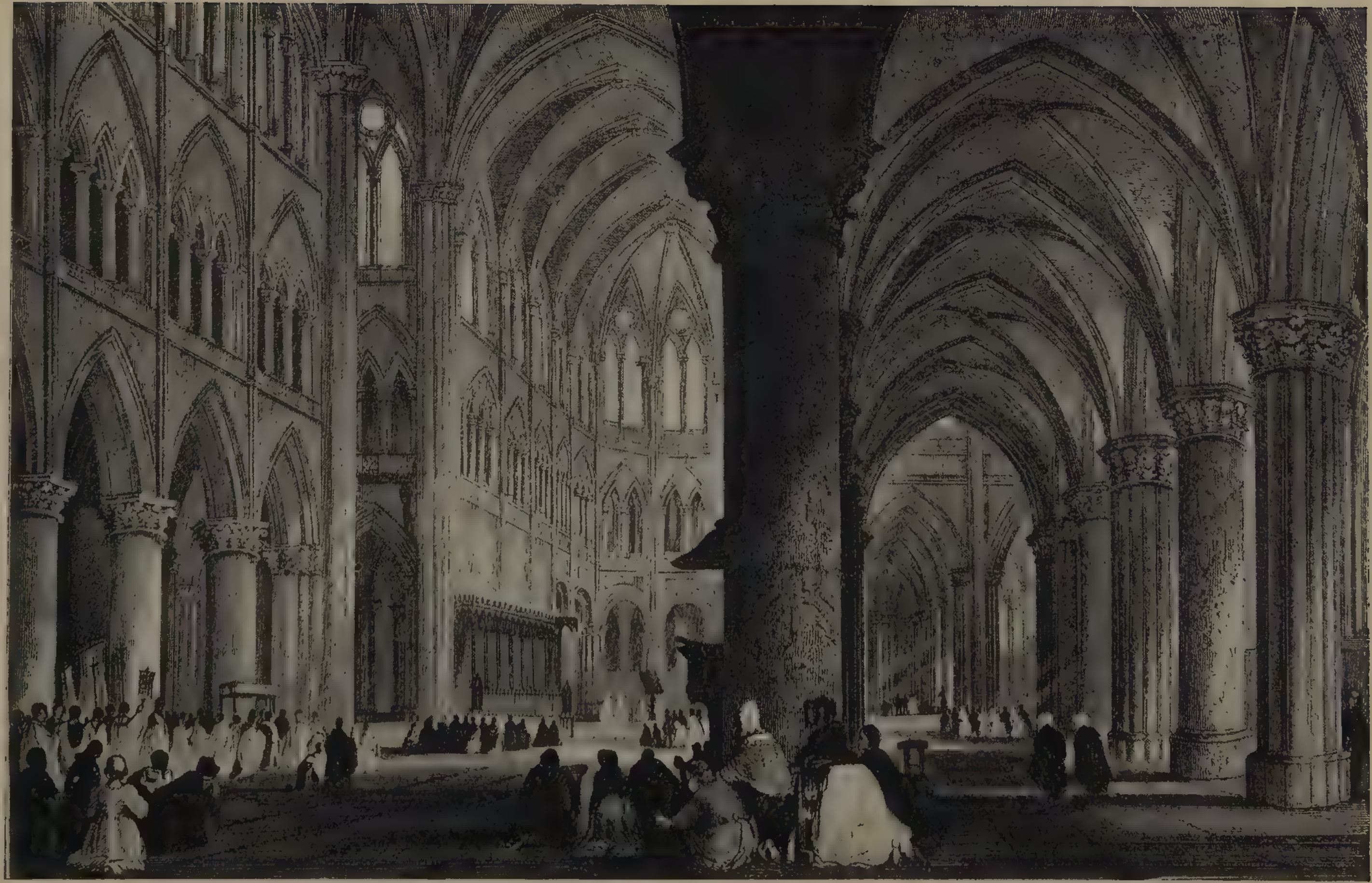

Fig. 106. Cathedral of Paris. Interior

Paris was the first to be undertaken upon a great scale. It was the first of the buildings of a size sufficient to satisfy both the religious and political requirements of the time."

The cathedrals of the closing twelfth and entire thirteenth centuries, were the work of the people,[16] the so-called lay builders, as distinguished from the monastic builders of the preceding age, the Romanesque—those monks who erected the abbeys. It is the gratitude of justice to remember that in the great amount which later ages owe to monasticism, the debt is especially heavy for the way in which the monks kept the art of architecture alive during the Dark Ages, and developed it in feudal times. It was these same monks who taught the rudiments of architecture to the laity when the guilds made the times ripe for learning and conditions admitted of practise. Finally, it was the enthusiastic French people, supremely intelligent, in a most remarkable age, who, in a flight of unsurpassed imagination, guided by common sense, invented the Gothic style, and in that style erected many monuments not since equaled either in size or beauty.

When a man enters that great square of which the cathedral of Paris,[17] Notre Dame (Fig. 104), occupies one entire side he comes into the sacred presence of beautiful, stalwart age. About the unshaken foundations of this vast pile the human tide has rippled, as to-day, or dashed tempestuous, as in the Revolution, close on to seven centuries.

What are the most striking features of the great façade? Certainly the four massive buttresses which flank it and divide it into three equal vertical parts. These buttresses are many feet deep and thick, and they rise, practically bare of ornament, to the towers. In fact the towers themselves are little more than the continuation of these buttresses above the cornice of the façade. But upon examining the church on all sides (Fig. 105), and where there are no towers, it is found to be circled by a constant succession of buttresses. What is their purpose? Those giant piles of masonry set against the outer walls, with flying arches that leap high over the aisle roofs and come in upon other buttresses, wall-thickenings which rise to the roof line, were surely not built for nothing, or only for ornament. The answer is to be found within the church itself.

On entering (Fig. 106), the impact of the sum total of grandeur is at first overpowering. When this has passed a little, what is it that strikes the cooler reason as being most remarkable? Surely it is the vaulted stone roof, poised at such a surprising height, and carried on piers that are of themselves alone apparently inadequate to do the work of supporting and

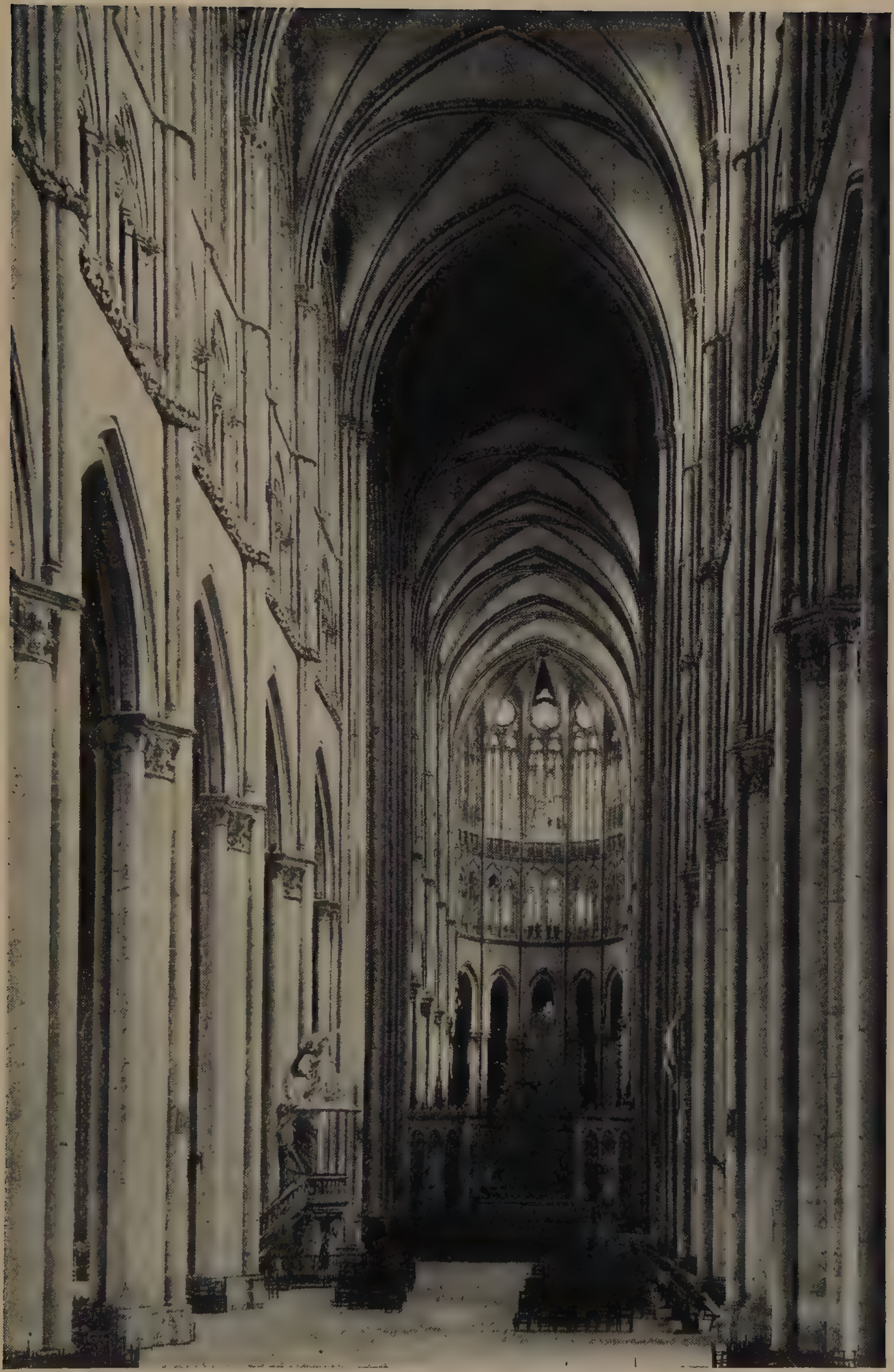

Fig. 107. Amiens. Nave, looking East

counteracting all the weight and thrust of those tons and tons of stone. These vaults, made up of arches, like all other arch constructions, must tend to split apart of their own weight, or thrust. Here, as in Romanesque architecture, the method of overcoming thrust was to meet it, either with a counter thrust, or to set a sufficiently powerful inert mass against it. Those buttresses, with their flying arches (Fig. 105), that surround the entire outside of the church, are the constructive expedients by means of which the vault thrusts are rendered harmless. The piers on the inside are heavy enough to carry the vertical weight of the actual stone in the vaults. Thus the gigantic roof is made secure.

At this point the underlying principle of Gothic construction has been reasoned out, and one-third of a definition of Gothic architecture can be formulated.

A church built in the Gothic style is an edifice in which stone vaults, composed of arches, hence exerting powerful thrusts, as well as great vertical weights, are held in place by a series of buttresses sufficiently solid to overcome those thrusts, while the downward pressure of the same vaults is carried by a series of piers.

Look now with care at the vault of Paris (Fig. 106). First one discovers that the vaulting surface rests upon a set of independent ribs. The same is true of the surfaces of the vaults of St. Ambrose in Milan. The Gothic builders took this idea from their Romanesque predecessors.

Next, one discovers that the nave vaults are set

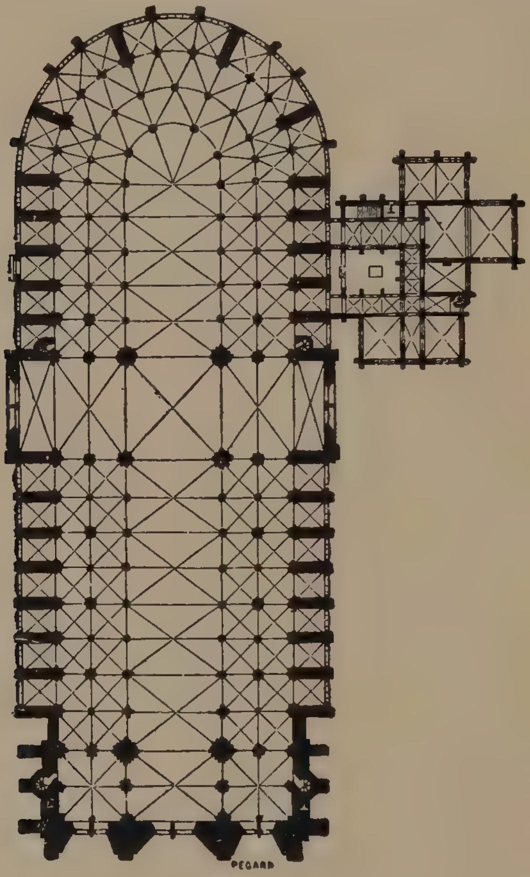

FIG. 108. PARIS. PLAN

over oblong compartments (Fig. 108), and that each vault has a complete set of ribs, two diagonal, two transverse—those sprung at right angles to the length of the building—and two longitudinal, those which follow, or are parallel with, the length of the building.

In the fact that these vaults have this complete set of ribs, there appears a difference between Romanesque vaults and Gothic, but a difference that is really not essential. That each rib has its own supporting member in the pier below (Fig. 106), marks a likeness between the most progressive type of Romanesque architecture and Gothic. That the piers of Paris are not, however, compound piers from the pavement up, marks a likeness between Gothic and the least progressive forms of Romanesque, such for example as the nave of the cathedral of Pisa. Reginald Blomfield, in speaking of mediæval architecture, says that in it one beholds, "the idiosyncrasy first of peoples, then of provinces, then of places, then of individuals steadily making its way to the front."

Finally, in this careful scrutiny of the vault of Paris one discovers the all-essential fact about Gothic construction—the fact wherein lies the essential difference between it and Romanesque, and the reason of its superiority to Romanesque. The transverse and longitudinal ribs are pointed. The diagonal ribs are circular. A little geometry and common sense will make the reason for these pointed ribs clear, and their superiority evident.

In such intersecting Romanesque vaults as those of St. Ambrose the vaulting compartments are square (Fig. 75), and the transverse and longitudinal ribs or arches are semicircular. So too are the diagonal ribs. The diagonal ribs reach to a greater height than those spanning the sides of the vault compartment, hence the vault surfaces which rest on the skeleton of independent ribs had to be domed. It is the independent ribs and the doming of the vaulting surfaces which make it Romanesque.

To return now to the vaults of Paris. Here the vaulting compartments of the nave are no longer square, but oblong (Fig. 108).

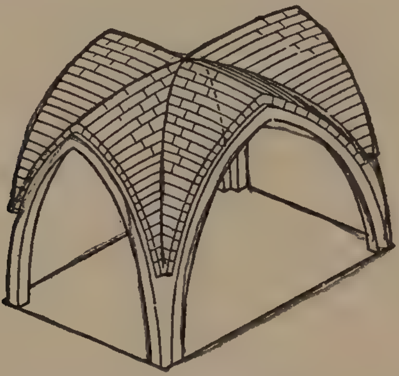

Fig. 109. Gothic Vault Construction

The Gothic builders discovered that the crown of an arch could be raised to any height, or level, by pointing the arch more or less; that the crown of a rib over the narrow side of a vaulting compartment could be easily raised to the level of the crown of a rib over the wide side of the same vaulting compartment, by more or less pointing the respective ribs.

The diagonal ribs (Fig. 108), spanning a distance greater than those spanned by either the transverse or longitudinal, were built semicircular. Now if the transverse and longitudinal ribs were made semicircular their crowns would not reach up to the level of the crown of the diagonal, and building vault surfaces from the lower to the higher ribs would be, to say the least, very difficult and awkward. By pointing the ribs over the sides of the compartment this difficulty was obviated. Whereas, the Roman builders had regarded the elliptical groin as a necessary mathematical result of equal barrel vaults intersecting at right angles, and the Romanesque builders, a square vault compartment as most desirable, the Gothic builders reversed the whole process, beginning with the groin ribs and an oblong compartment when they chose;—then, by pointing the side ribs they shaped the vault to meet any exigency of plan. A further advantage of the pointed arch was quickly seen to lie in the fact that such an arch exerts less thrust than one that is round, because the sides are steeper.

Thus, in stern necessity, and in a spirit of intense reasonableness, the pointed arch was introduced;—a form not chosen because it was thought to be more beautiful than the round, or for mere preference, but because it was supremely useful. At first its use was a matter of hard common sense. Later it became a source of wonderful beauty.

The second third of a definition of Gothic architecture can now be formulated and added to the first. A Gothic church is one in which stone piers support the weight of the vaults, the vaults themselves being carried upon a skeleton or permanent scaffold of independent stone ribs, pointed or round, three pairs to each vaulting compartment. These ribs gather the weight and concentrate the thrusts of the vaults near the tops of the piers, to which strategic parts of the construction the counter thrusts, or the inert masses, of the buttresses on the outside of the building are applied.

Look now at the sides of the interior of Notre Dame, or eastward into the high semicircular apse (Fig. 106). What is the most striking feature? The fact no doubt that the building is everywhere, on the inside, divided into three stories. Such a division is typical of almost every great Gothic church. The lowest or ground-story arcade is composed of piers, connected by pointed arches on which rests a low wall filling the triangular spaces, the spandrils, between the arches. This story opens into the side aisles. Next, in ascending order, comes the triforium. It consists of a pointed arcade, the individual openings of which are subdivided into triple narrow pointed arches which look into the nave. This arcade is the front of the gallery over the side aisle. The third story is the wall above the triforium which rises to the vaults. This wall, carried high above the line at which the triforium vaults come in against the nave, is pierced with windows. It is the clerestory. As a matter of fact the actual wall in this whole structure is negligible, the open arcades and the windows occupying practically all the space between the piers, and beneath the vaults. In many of the greatest Gothic churches, such for example as Amiens (Fig. 107), the arcades and windows do occupy almost every inch of space between the piers and beneath the vaults. With the recognition of this fact the definition of Gothic architecture—a working definition—can be entirely formulated.

A Gothic church is one in which vaults resting on a complete skeleton of independent ribs, pointed and round, are held in place by buttresses, all the space between the piers, and beneath the vaults on the interior, being left open—on the exterior, glazed. A Gothic church consists of a framework of piers, buttresses and ribs, supporting and securing stone vaults overhead, and enclosed at the sides with glass.

A section of the nave of the cathedral of Amiens (Fig. 110), begun in 1220, will show the Gothic system of construction developed to the utmost, and applied on a grand scale. Compound piers (Fig. 107) rise to the springing of the nave ribs. The vault surfaces rest upon these ribs. The side aisles are con-

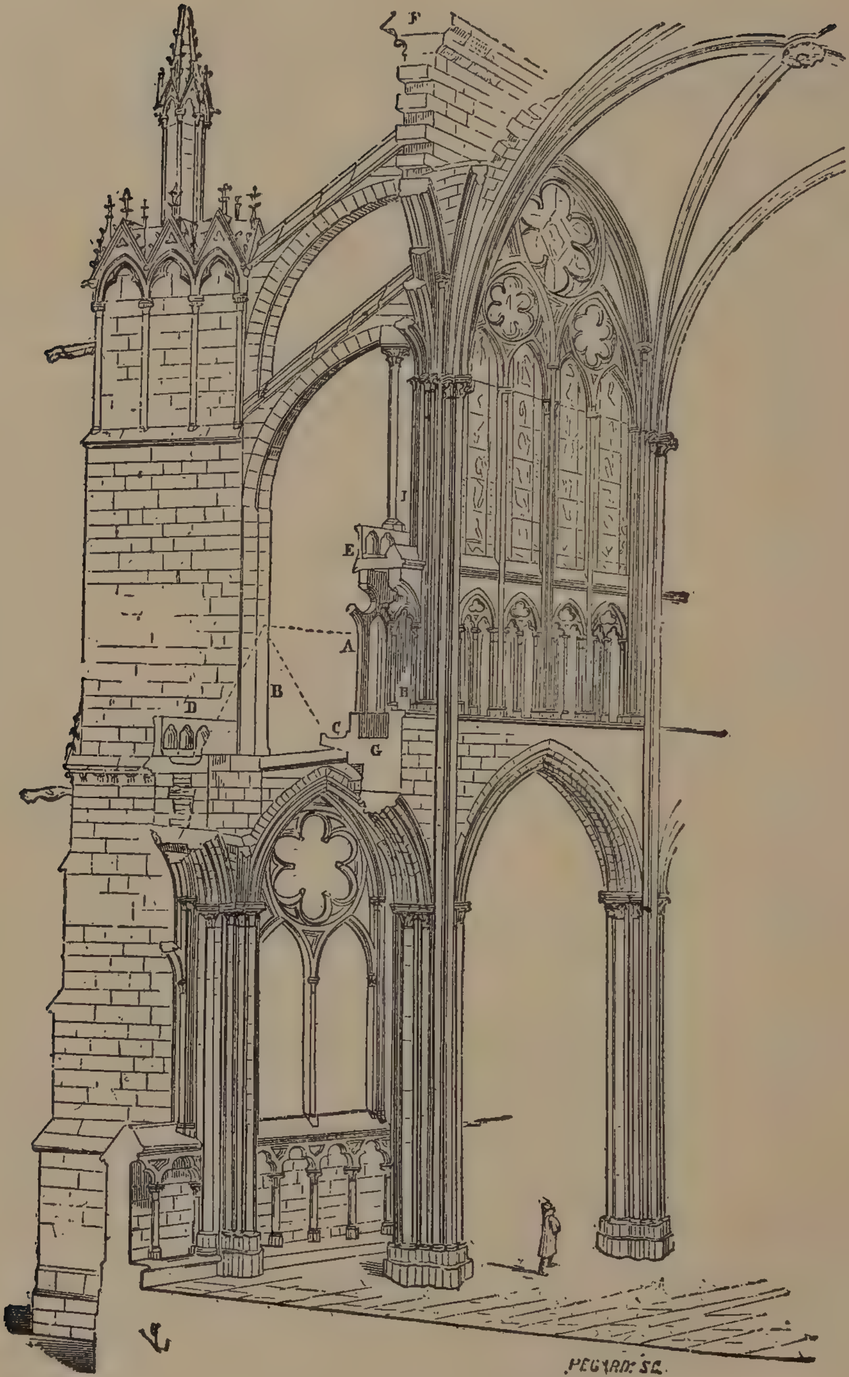

Fig. 110. Amiens. Gothic Construction

structed in precisely the same way. The thrusts of the nave vaults are counterbalanced by the flying buttresses (Fig. 110), which leap high over the aisle and triforium, from the great outer buttresses to the point, really a vertical line, in which the thrusts of the nave are gathered. The system implies a wonderful balance of opposing forces exquisitely adjusted so as to secure stable equilibrium. The nave of Amiens is more than forty feet across and one hundred and forty feet high. Amiens, says C. H. Moore, "may justly be considered as the crowning glory of Gothic art, and the grand summing-up of the principles and constructive forms that had been gradually taking shape since the beginning of the twelfth century."

If one appreciates intelligently the section drawing of the choir of the cathedral of Beauvais (Fig. 111), realizing that the crown of the vault is one hundred and fifty feet above the pavement, understanding that the flying buttresses which stay that vault rise one hundred and sixty feet into the air, he is tempted to doubt the truth of figures, and the sanity of the draughtsman, but when he finds himself standing for the first time in the choir of Beauvais (Fig. 112) he will doubt rather the truth of his own sight and the sanity of his own mind.

The exterior of Beauvais (Fig. 113), equally marvelous, makes the meaning of Renan's figure about

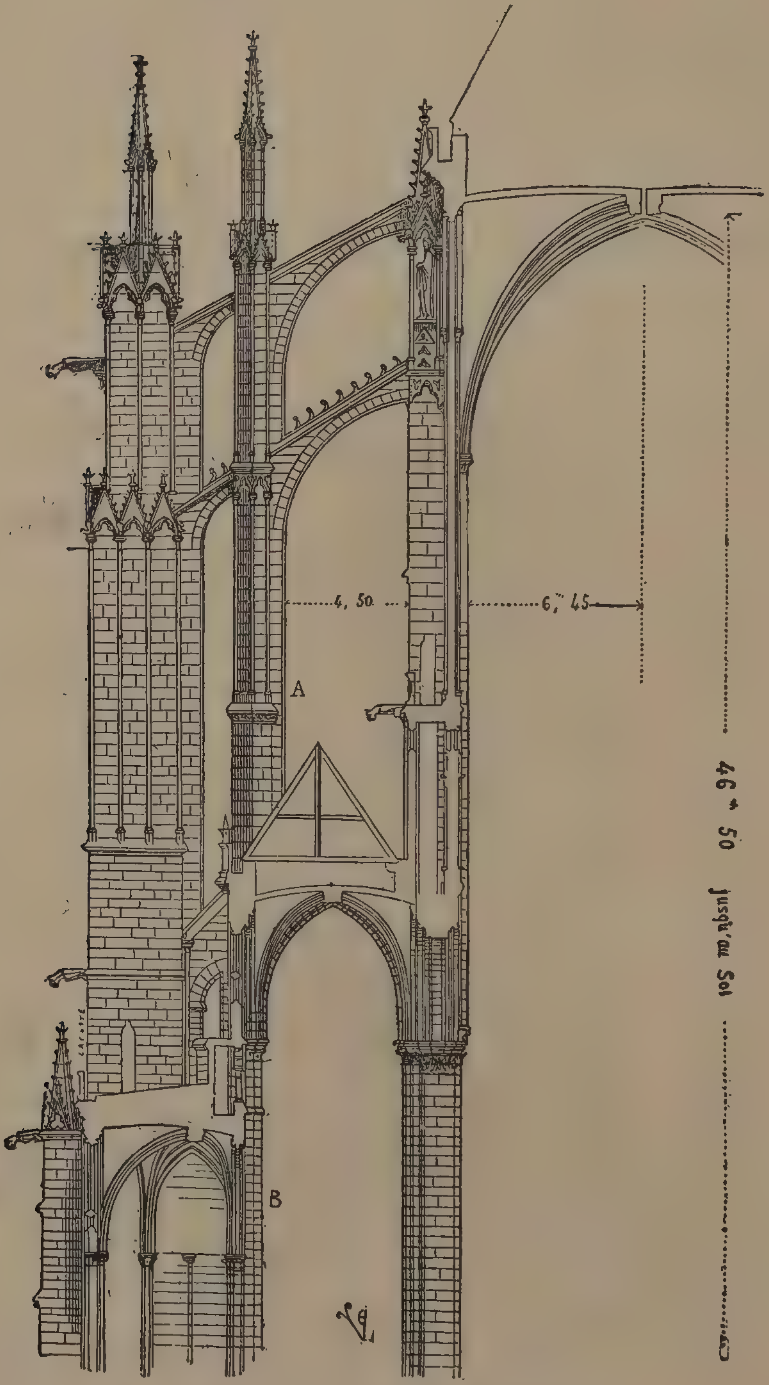

Fig. 111. Beauvais. Gothic Construction

a Gothic church clear, "a huge animal with its skeleton on the outside." And no less has it a skeleton on the inside. The sight of such a structure as Beauvais opens the doors of two worlds, the eminently practical, and the preeminently imaginative. Through those doors one looks straight into the Middle Ages and beholds their true greatness.

Returning to the cathedral of Paris let us examine its great west front (Fig. 104) with care. In addition to three vertical divisions it is divided into three horizontal divisions; a rectangle, not far from square, made up of nine rectangular parts, above which the towers rise at the right and left. The front is three storied like the interior.

The three spaces flanked by the buttresses in the lowest story are occupied by deep, almost cavernous, recesses, inhabited by personages of Holy Writ and sacred history. These recesses, the portals, are the main entrances. They answer to the arches of the ground-story arcade within. Extending across the entire front just over the portals there is an arcade, beneath the twenty-eight arches of which stand colossal statues of the kings of France.

It should not be forgotten that this church was erected, like other great mediæval churches, to serve ends secular as well as religious. The doorways are lined with the figures of Christ, the Virgin, saints, apostles and ministers, the heavenly hierarchy and its worldly representatives. The arcade of kings represents temporal and civil power—the state. The whole is a perfect expression of that all-dominant mediæval conception of a united church and state, in which men would render unto God the things that are God's and unto Cæsar the things that are Cæsar's.

Above the arcade of the kings there are windows, answering in a way to the arrangement of the clerestory within. The central circular window, technically known as "rose," is forty feet in diameter and occupies the space between the westernmost piers of the nave, and beneath the transverse rib which connects them at the front end of the nave. The rose is flanked by twin pointed windows under pointed arches.

Higher yet are the towers, connected by an open arcade forty feet high. This arcade serves a double purpose: it is a bridge from tower to tower, and also a splendid decorative crown for the vast and solid fabric below.

Strictly speaking there is no inherent difference between a Romanesque and a Gothic front. Each is a several storied structure, divided by buttresses, and crowned with towers. In other words, the essential matters of structure which differentiate the Gothic style from the Romanesque did not in any fundamental way differentiate a Gothic front from a Roman-

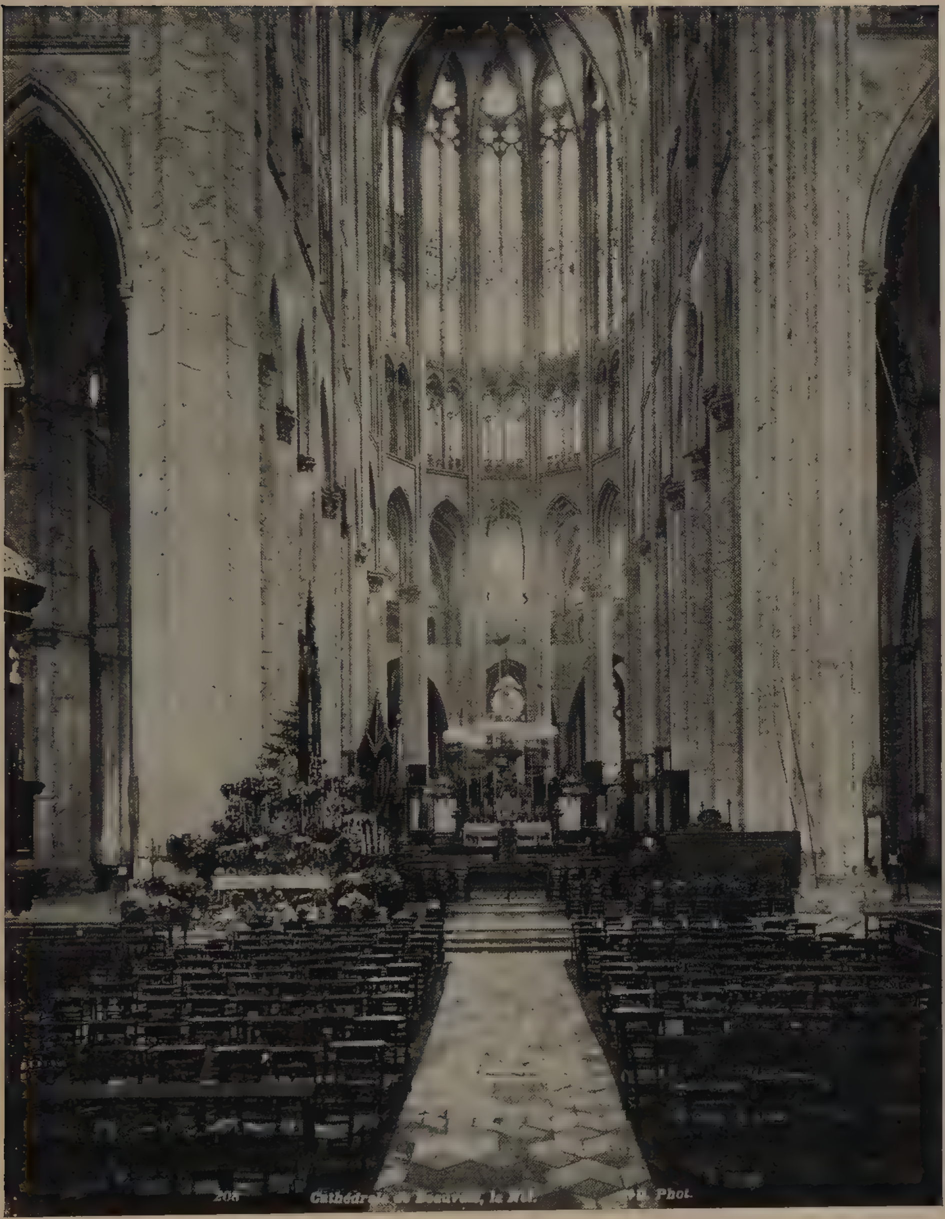

FIG. 112. BEAUVAIS. THE CHOIR, INTERIOR

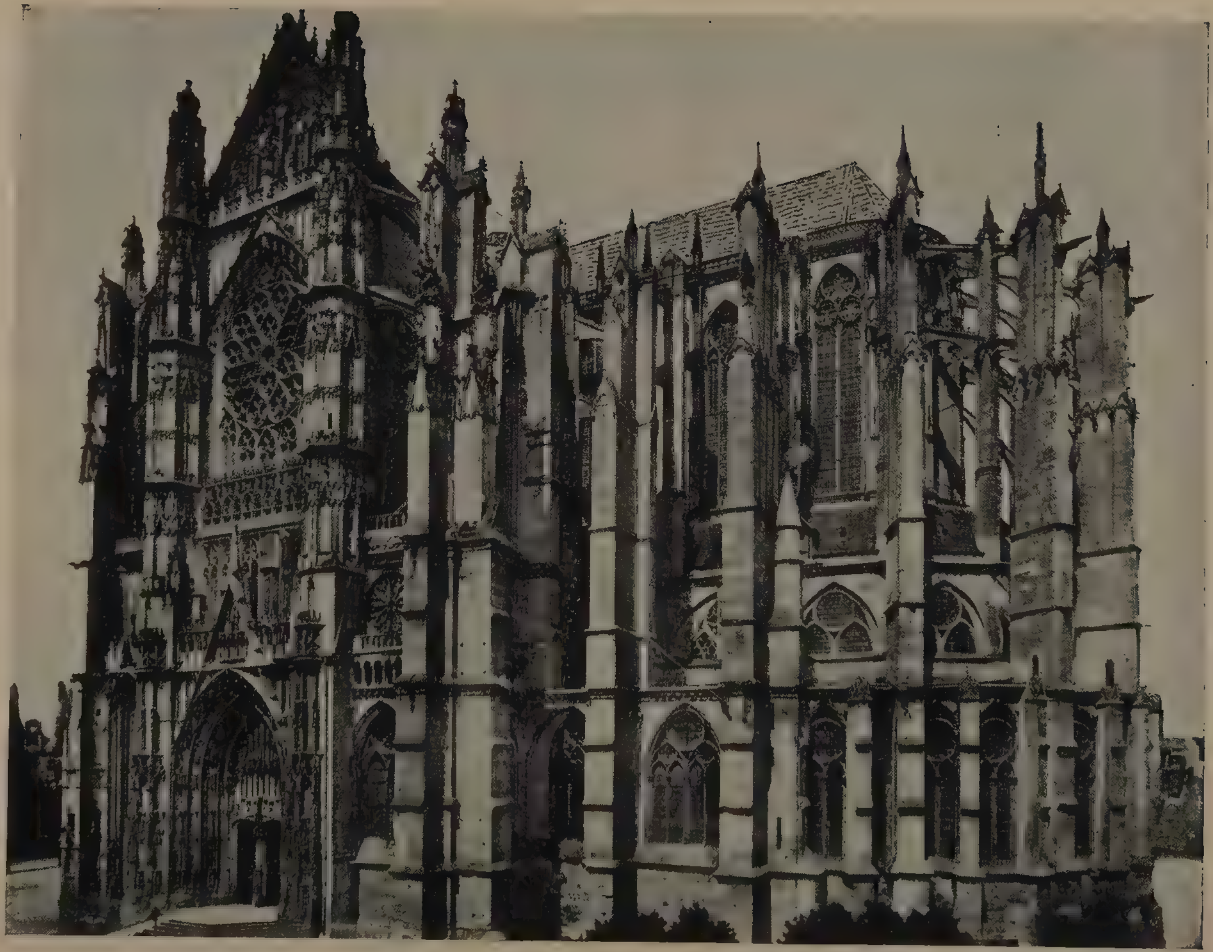

FIG. 113. BEAUVAIS. GENERAL VIEW

esque front. It is not the number and kind of details, great, exquisite, or crude, of whatever sort, that make an architectural style, but the expression of a logically thought-out, constructive system, overlaid with detail of its own peculiar development. The general schemes of the front of the Abbey for Men in Caen (Fig. 81), and the cathedral of Paris, do not differ. The real constructive principles of the one and the other are distinct and different. In the Romanesque edifice the round arch is everywhere, and the least detail of molding, or capital, belongs to the development that was contemporary with the growth of Romanesque. In the Gothic front of Paris pointed arches replace round, in doors, windows, arches and all places where an arch is used. So too the Romanesque capitals and moldings have given place to new forms—forms worked out along with the development of the Gothic structural system, and in accord with that system. The front of the Abbey for Men expresses the Romanesque spirit in every element.* The façade of Paris expresses the Gothic spirit in the least and greatest of its almost endless details. But these elements and details do not constitute the essentials of style. They are the minor and superficial, though vastly important, evidences of the style; the style called Gothic, being a far more reasonable one, more highly articulated, and expressed in an infinitely more elaborate, vital and delicate fashion than the style called Romanesque.

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*The spires are Gothic and of a much later date than the rest of the façade and the towers.

Moore says that "the magnificence, without extravagance, of the . . . . façade of Amiens (Front.) is, in some respects, beyond all praise." In these fronts of Paris and Amiens, in the naves of these same churches, the choir of Beauvais, or the exteriors and interiors generally of the many superb monuments of Gothic architecture, whether French, or on German, Spanish, English soil, or in the Low Countries—in all, there are those qualities in varying degree, which Blomfield so admirably says inspire the sense of "organic thought moving in orderly sequence, through particulars, to the total effect."

Again we may return to the front of the cathedral of Paris (Fig. 104) for the specific illustration of a general law of architectural design, especially of Gothic design. Few problems set the architect are more difficult to solve, at once beautifully and reasonably, than that of disengaging a tower from the mass of the building to which it belongs without a disjointed or abrupt effect; a disjointedness and abruptness of effect so common that few persons probably ever suspect it, or even dimly realize that the usual church tower is nothing more than a glorified chimney—a

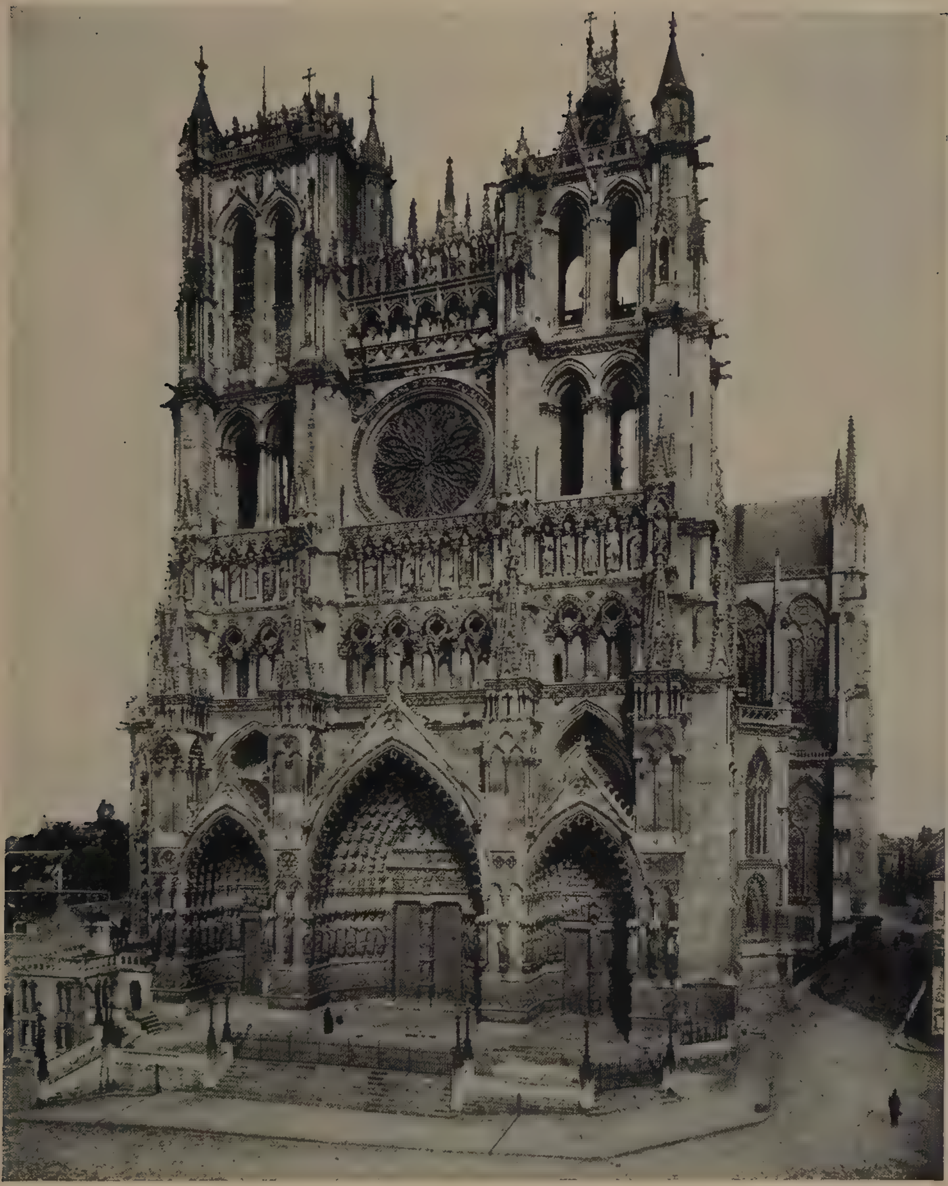


Fig. 114. Amiens. Façade

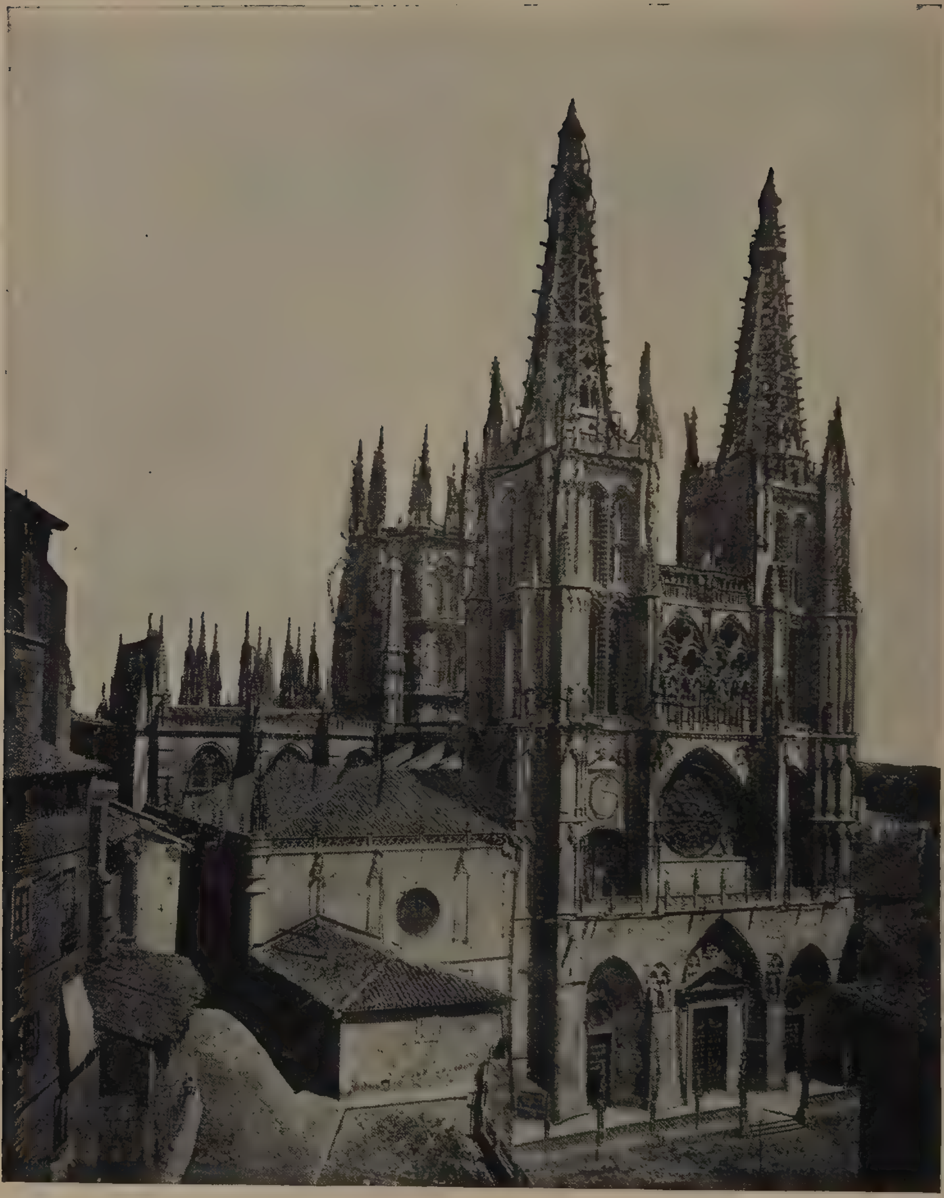


FIG. 115. BURGOS. GENERAL VIEW

lofty excrescence sticking up through the roof. In the design of the front of Paris the open arcade forms a screen, or pattern of light and shade, disposed in masses of pleasing intricacy about the bases of the towers. This arcade, crossing the open space between the towers, makes the upward transition gradual from solid building to open sky; keeps the unity of the design intact, by continuing uninterruptedly across the open space between, and about the foundations of the towers alike. There is no abrupt change, no shock of extreme difference. Every part and detail is united to every other. Altogether they complete a whole which is greater than any of its parts, and more impressive than any of its parts, and lovelier. As with all works of transcendent genius, the meaning and beauty of this façade increase upon acquaintance, just as delight in the best music does, or in great poetry and painting. "To him who hath," or "the eye seeing what the eye brings with it the power of seeing"—law of unfailing force—holds here as elsewhere.

Amiens may be regarded in many respects as the characteristic and perfect example of the Gothic style. No one has combined in a single brief account the typical character of a vast Gothic interior (Fig. 107), and the actual conditions of a particular example, with such art and skill and understanding as Pater in his essay on *Notre Dame d'Amiens.*

"Light and space—floods of light, space for a vast congregation, for all the people of Amiens, for their movements, with something like the height and width of heaven itself enclosed above them to breathe in;—you see at a glance that this is what the ingenuity of the pointed method of building has here secured. For breadth, for the easy flow of a processional torrent, there is nothing like the 'ambulatory,' the aisle of the choir and transepts."

And again:

"From the flagstone at one's foot to the distant keystone of the *chevet* [apse], noblest of its species—reminding you of how many largely graceful things, sails of a ship in the wind, and the like!—at one view the whole is visible, intelligible;—the integrity of the first design."

The plan of Amiens (Fig. 116) consists of a nave, the eastern extension of which, beyond the transepts, forms the choir. The choir terminates in a semicircular apse. The cross part, half-way down the length of the church, makes the transepts. The nave and transepts are flanked by single aisles; the choir by double aisles, the inner of which extends around the apse. The apse-like chapels, a sort of continuation of the outside aisle of the choir around the apse, are additions of a later time.

The nave, central aisle of the transepts, and the

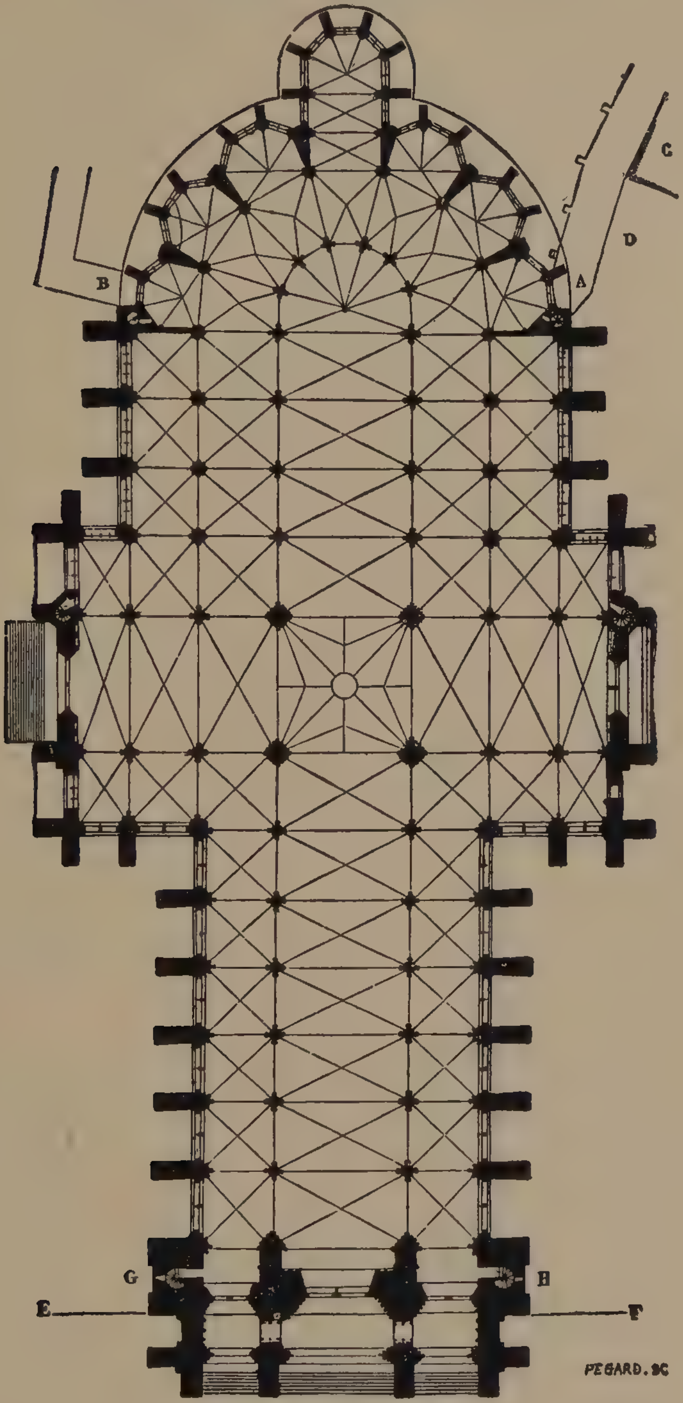


Fig. 116. Amiens. Plan

choir, are separated from the aisles, and the aisles, when double, from each other, by piers which support the vertical weight of the superstructure of vaults, while outside are the buttresses which counteract the thrusts of the vaults.

The vaulting compartments of the aisles of the nave, transepts and choir, are square. Those of the nave itself, central aisles of the transepts, and choir, are oblong. Those of the aisle around the apse are wedge-shaped. All of these varied forms of compartment, regular or most irregular, were easily, securely and gracefully vaulted with intersecting vaults, the Gothic principle of which resides in the independent complete system of ribs, and the pointing of such ribs as require their crowns elevated. By the invention and application of this Gothic principle architecture was made absolutely free, so far as vaults were concerned, in comparison with its condition either in Romanesque or in Roman times.

"Art that breaks bounds finds soaring room." The bounds, the limitations that rested so heavily upon Roman and Romanesque architecture, on the side of construction, were by the Gothic architects literally broken, and, as a result, their art, their choirs and naves, soared as none had before, or any since.

The compound piers (Fig. 107) of the nave of Amiens offer an example of the perfect adaptation of the shape of a functional member in architecture to the function that it is called upon to perform, and such adaptation is typical of the Gothic style. On the side of the piers facing the nave a vaulting shaft rises uninterruptedly to the springing of the transverse rib. On either side of the pier, facing east and west, similar shafts carry the pointed arches of the ground arcade. The pier itself, circular in plan, has a carved capital proportioned to its diameter and height. The shafts which carry the arches of the ground-story arcade each have capitals less high, proportioned to their diameter and height. There is no capital where the transverse rib shaft passes the capital of the main pier and those of the arcades, but its capital is reserved for the place, the top of it, from which the transverse rib springs. The entire pier has a common base, each shaft having its individual part in that base. This same pier is provided with vaulting shafts on the aisle side.

From the capital of the main pier, each from a base of its own, rise two shafts set close to that which carries the transverse rib of the nave. Each of these shafts carries a diagonal rib of the nave vaults. Each has its own capital set close beside the capital from which the transverse rib springs, but smaller because somewhat less important structurally.

Finally, from the ledge of the triforium, two shafts, each on its own base, rise close beside those just described, to a level somewhat above that of the springing of the transverse and diagonal ribs. At this higher level, each from its own capital and shaft, rise the longitudinal ribs of the high nave vaults—those ribs which in reality form the points of the clerestory windows, while their shafts form the jambs. More logical thinking aimed at definite attainment was never bodied forth with greater simplicity of expression than in the many-membered, mighty piers of Amiens.

Standing in the nave one sees the windows of the aisles (Fig. 110), which are so arranged as exactly to answer in shape and width to the nave arcade, one sees the aisle windows filling, as it were, the ground-story arcades. These windows are divided into great lancer openings and their points are occupied with a single eight-pointed circle. The wall below the windows is decorated with a blind arcade also pointed or cusped, as it is called; that is, with points turning inward.

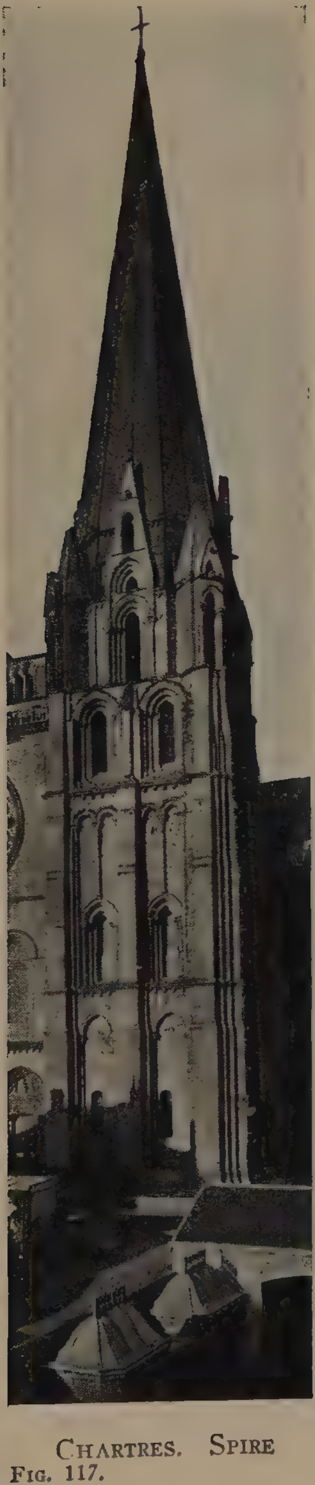
From the level of the triforium, marked by a wonderful carved string course which runs uninterruptedly the entire length of the church, there rises a central shaft, dividing the triforium space into two equal parts, and forming the central vertical division, the mullion, of the clerestory window above. The triforium openings consist of lancets beneath single pointed arches. Each column of the triforium has its own base and capital, and where the main openings meet, the columns form part of a compound pier—a perfect repetition of the design of the ground arcade, but varied as becomes its size and relative importance.

A second but simpler string course marks the ledge of the clerestory. From it rise the intermediate columns, the mullions of the great windows—windows eighteen feet across and forty feet high. The points of these two main divisions are occupied by four-cusped openings, the triforium points just below, by three-cusped. The smaller divisions are plain lancets like those in the aisle windows already described as seen through the ground arcade. To right and left, above the main secondary points of the clerestory window, other openings flank the great circle that fills the head of the window. This circle is cusped just as the aisle windows in the ground story are.

Within fixed artistic limits, rigorously adhered to, with a few elements, all of them essentially constructive, with shafts, and their bases and capitals, single or compound, the designer of the nave of Amiens produced an interior of sublime consistency, gigantic in dimensions and exquisite in proportion—a whole of surpassing beauty.

A careful half-hour's study of this Gothic nave or the façade of Amiens (Fig. 114) and a comparison of them with the front of a Greek temple or the interior, will make that comment of Pater's, which is beyond praise as a statement of illumined understanding, perfectly clear: "For the mere *melody* of Greek architecture, for the sense as it were of music in the opposition of successive sounds, you got [in Gothic architecture] *harmony,* the richer music generated by opposition of sounds in one and the same moment; and were gainers."

The most remarkable single feature of Gothic origin and development was the spire. Few even of the greatest cathedrals attained to this final splendor. The reason is not wholly clear. It may be, as some think, that the tremendous religious fervor which found visible expression in church building in the thirteenth century—zeal for the catholic faith, given visible body in these works of architecture—had so far died away by the time the spire was reached that the builders, the people, had lost interest, and so abandoned the undertaking. Or it may be, as others assert, that the French people, seeing that communal freedom was gained, thought it unnecessary to push the work on their cathedrals to its culmination in the practically useless and tremendously difficult task of spire building. Be this as it may, the fact remains that spires were intended from the first, in the design of these structures, and that the twelfth century spire of Chartres[18] (Fig. 117) is one of the most colossal works of its sort in existence, a design in which, says Moore, "the continuity of lines, all of which have a perfectly



CHARTRES. SPIRE
FIG. 117.

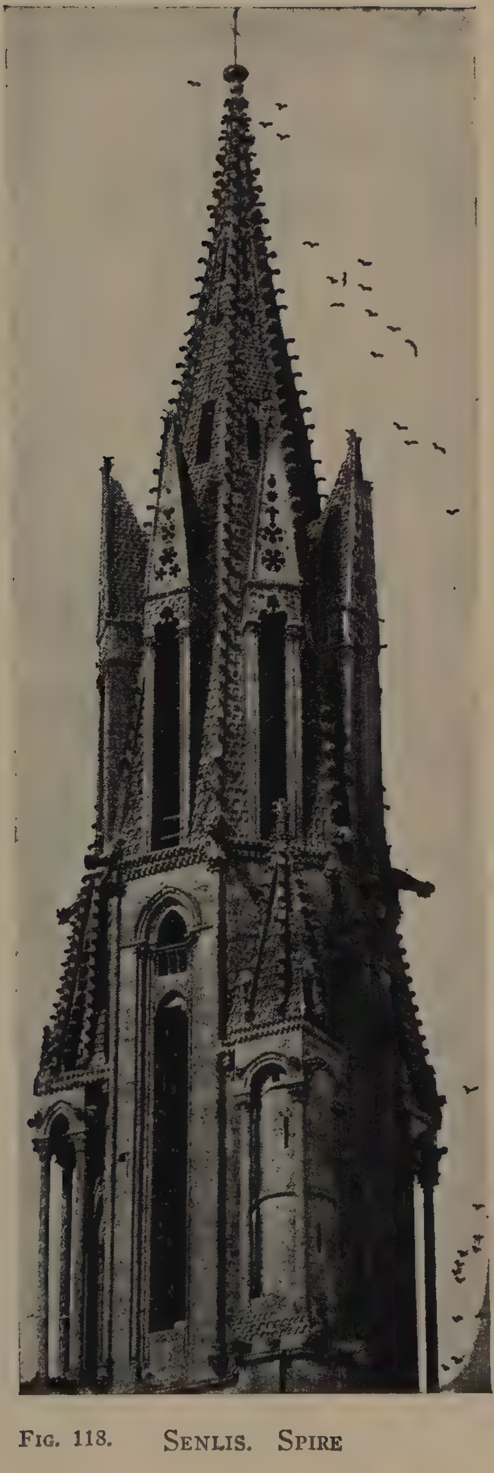


FIG. 118. SENLIS. SPIRE

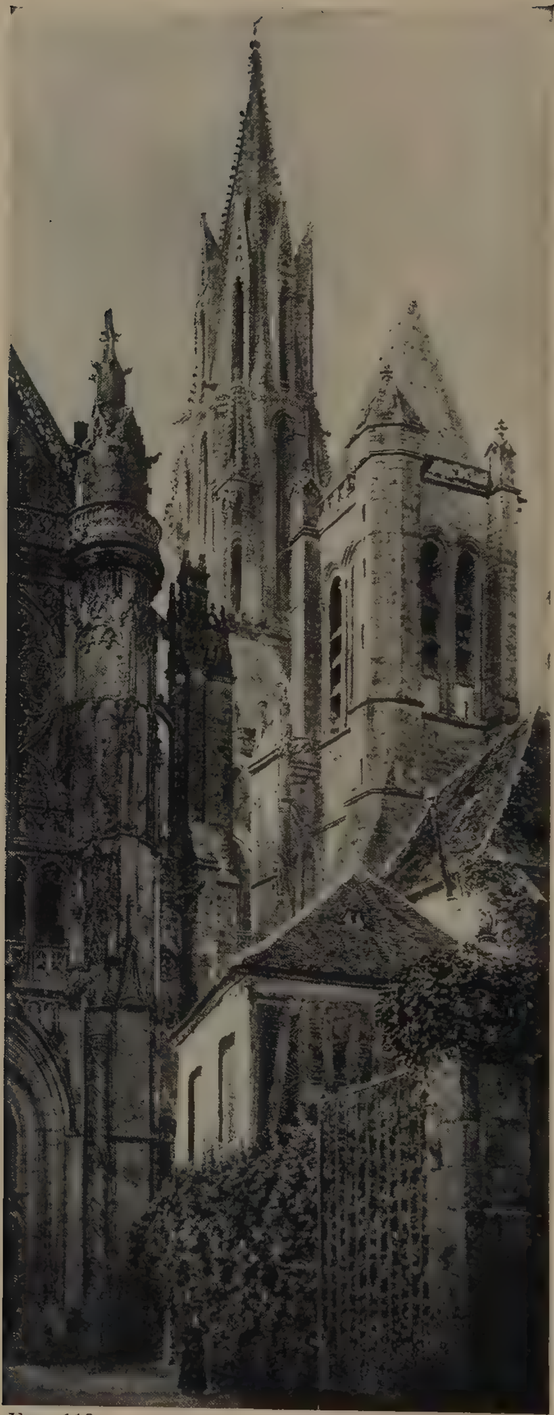


FIG. 119.

THE SPIRE OF SENLIS (*after Rooke*)

structural function and expression, is complete from the ground to the apex."

The early thirteenth century spire of Senlis (Fig. 118 and Fig. 119) is, however, just as logical in point of construction, and far more lovely in conception and detail—an object of unequaled beauty.

It has already been remarked that the disengaging of a tower from the body of a building in a graceful fashion is one of the difficult problems of architectural design. To erect a spire on the top of a tower, to design it in such fashion as shall make it look organic, to make it a natural, constructive and final development of the tower, to make it slender and not weak looking, airy, and not dangerous, stable, and not stunted—all these, and others similar, are very difficult matters, calling for great constructive skill, and a lofty imagination, subjected to reason and put forth in devoted pursuit of beauty. To such imagination, and such skill, the spire of Senlis has borne evidence for more than six hundred years—its sturdy graceful form only the lovelier because the tooth of time has chased its surfaces, and the gray and yellow of lichens has painted its pinnacles, and every spring gladdens its crevices with violets high up among the daws' nests, and every summer sweetens them with wall flower.

In this spire the transition from the tower to the eight-sided point is accomplished by a lofty octagonal drum, four sides of which are flush with, or continuations of, the cardinal faces of the square tower, while the other four sides of this octagon, being set back, leave free triangular surfaces at each corner on the top of the square tower. On each of these triangular surfaces there is a pavilion formed of three slender shafts carrying a pyramidal roof. These roofs are inclined backward against the side of the octagon. The slanting lines and surfaces of these pavilion roofs lead the eye upward, their direction being taken at an angle slightly different from that of the spire itself. The angles of the great octagon point coincide with the angles of the octagon drum. Each of the eight lofty triangular surfaces of this point is faced in its lower half with a high dormer capped by a steep gable. These eight dormers form a crown or circlet of points from which the peak of the spire makes its final ascent.

In this structure we witness the designer's wonderful regard for the appearance of strength as well as its reality, together with a never failing sense of uplift, and graceful force, which are the essence of a true spire. He has knit part and part together by carrying the vertical fronts of the dormers well up to the apex, and the slanting surfaces and lines of the point, and the pavilion roofs, well down toward the base. The total effect is produced by many minor effects, a mighty point rising from the midst of a crown of minor points, of short inclined lines and planes, surrounding similar lines and planes of great dimensions. The total character and least detail of this design savor of soaring verticality and lofty pointedness. There is further a wonderful unity of conception in the ornament of this spire. Slender columns with carved capitals flank the dormer windows, and the tower windows lower down, or carry the pavilion roofs, which roofs, like those of the great point above, are decorated with crockets (carved projections in high relief) which emphasize the angles, and so give a sense of strength in necessary places, and by their great number, in constant upward lines, augment the sense of height. Remove those many crockets, with their attendant shadows, and much of the meaning and beauty of the spire of Senlis would be lost. They are of those "little things," however minor, which in the execution of great designs mean much.

An intensely interesting, as well as beautiful instance of the builder's regard for symmetry and affection for variety, is displayed in the piercings of the eight dormer gables. There are upward of fifty of these decorative black patterns—merely holes—in what would, without them, be uninteresting, flat, brilliantly lighted, triangular surfaces. These patterns are all grouped into triangular spaces which correspond in form with the high gables of which they are the ornament. But every pattern of the fifty is different from every other, thus insuring variety and changefulness akin to that which is never lacking in the works of nature—the one insurance against stupidity in works of art, and the sole assurance of their not boring keen eyes and sensitive minds.

For pictorial quality, or the utmost reach of what is called picturesque, no architecture has surpassed Gothic, if any has equaled it. Nowhere can this be more keenly realized than in Senlis, where the ivy-covered walls of the cathedral gardens, half-timbered walls of its theological houses, elaborate pinnacles, steep carved transept gables, and bleak unfinished north tower, are always, as one moves through the town, arranging themselves in marvelous compositions of interest and loveliness about the beautiful spire, which dominates a smiling country far and wide, as well as a very old and cheerful city.

As might naturally be expected, the twelfth and thirteenth century Gothic structures of France soon inspired imitators in the other countries of the continent, as well as England. But the Gothic style—one depending primarily on certain fixed though flexible principles of building construction, which produced characteristic and inevitable features, internal and external—was never thoroughly comprehended by the Italians, Germans, or English, the Spaniards or the

Dutch. Not completely understanding the principles of Gothic construction, in the French sense, but greatly admiring the general aspect of Gothic architecture, and generally assuming that the pointed arch, with certain attendant details of ornament, constituted the essentials of the style, many builders in many lands took up that style; brought it into fashion, so to speak, and in it erected vast and beautiful buildings, but, if as vast and as beautiful, certainly not as logical, nor from any point of view as grandly simple, as Amiens, or other great French Gothic churches.

In England, after the Norman Conquest, power was held under the crown by great ecclesiastical bodies. Such powers as were gained by the French communes, and such relations as arose between those communes and the French bishops, were unknown in England. The English cathedrals were not built in enterprising towns, nor were they in any way the exponents and expression of the privileges of the laity, as in France. To the present day most of them are in towns scarcely larger than villages.

In the sense in which French Gothic architecture of the thirteenth century meant the invention and application of certain constructive elements, the Gothic of England is in nowise comparable. The fact that the English church builders made wide-spread use of the pointed arch after 1250—up to that time the architecture of England was dominantly Norman and unquestionably fine—does not constitute Gothic, though it made for numerous superficial characteristics of Gothic. Many an English cathedral, Wells for example, is to all intents and purposes a Norman structure in which pointed arches have been substituted for round. On the other hand such a design as that of the splendid choir of Canterbury, or the design of parts of Westminster Abbey,[19] is as Gothic—taking the term to include that constructive meaning and those structural peculiarities already described—as the design of any building in France.

The English cathedrals have one striking individuality of plan which separates them widely from those of France, namely, square or flat east ends, whereas the French have round or polygonal. Double transepts, both toward the east, are likewise common, though by no means universal. Finally, timber ceilings are not unusual, while the vaulted stone roofs of English churches are in the main unlike those of thirteenth century Gothic churches in France. This difference is due chiefly to the introduction of unnecessary ribs in the skeleton of the vault which led finally to an interlacing of ribs, increasing in complexity as time went on until the age of Henry VII, and what is known as "fan vaulting" (Fig.

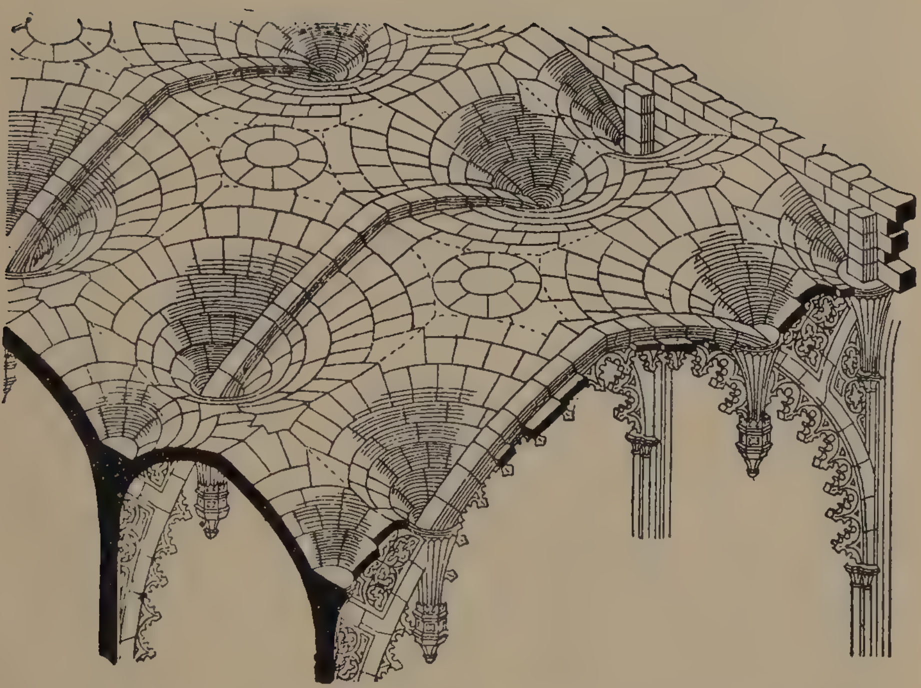


Fig. 120. Chapel of Henry VII, Westminster Abbey. The Vault

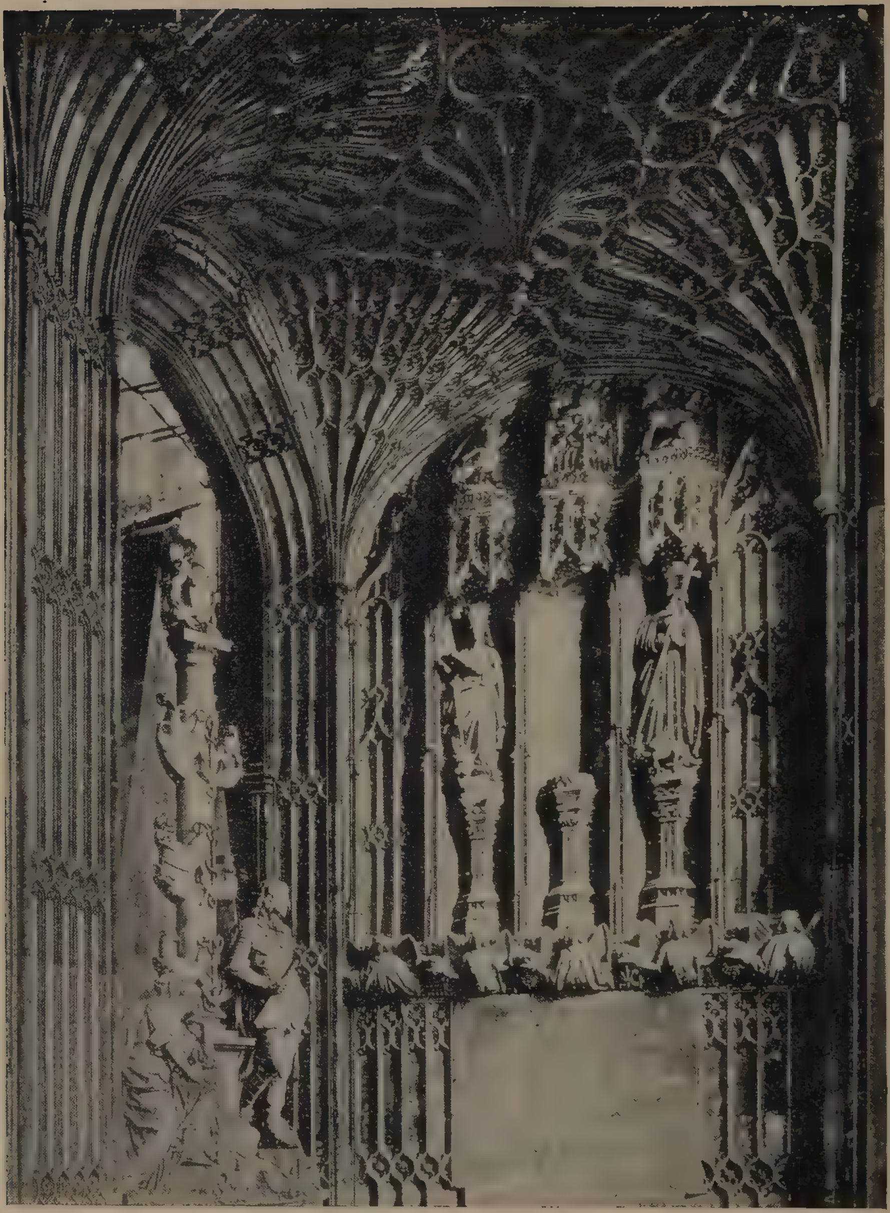


Fig. 121. Chapel of Henry VII, Westminster Abbey

120), in which cone-shaped masses of stone, point down, intricately paneled with surface ribs, i. e., not ribs, but carved representations of ribs, are suspended upon the real transverse ribs which are to be seen springing from the wall on either side, and are lost as they rise behind the stone cones which they carry. The further elaboration of detail with which every part is trimmed only adds to the intricacy of such vaulting, of which Henry VII's chapel (Fig. 121), Westminster, is justly the most famous example —an object of amazement rather than beauty. Bacon chose the right word when he called this chapel dainty. It is dainty rather than beautiful. He called it stately. It is stately rather than sublime. He said, "Henry lieth buried . . . . in one of the stateliest and daintiest monuments of Europe."

The pointed architecture of England in the fourteenth century is usually known as "Decorated," and it belongs in great measure to the reigns of Edward II and Edward III (1307 to 1377). The pointed architecture of England during the fifteen century, and well into the sixteenth, when it was displaced by the fashions of the Renaissance, is called "Perpendicular."

The characteristics of the three principal varieties of English pointed or Gothic architecture are most easily discerned in the three types of windows which were developed in connection with that architecture.

The earliest, in point of time, and the simplest (Fig. 122), are the lancet windows; tall narrow openings with sharply pointed arches and no divisions or tracery, by which is meant the stone mullions and other framework, often very elaborate and decorative, in which the glass is set.

The second belongs to the "Decorated" (Fig. 123). In it, the point of the window is filled with rich tracery, sometimes of a geometrical design and sometimes of a pattern in which the lines bend and waver like flames, hence the term "flamboyant" by which such work is usually designated. The lower parts of the windows are as a rule divided and subdivided by mullions.

The third belongs to the so-called "Perpendicular" (Fig. 125), because the mullions which divide the window vertically rise straight up to the head of the window—no matter how elaborate its tracery—and strike the bounding arch. In this style the mullions are often crossed at various levels by horizontal bars of stone called transoms, in which case each rectangular section bounded by mullions and transoms is treated with a point of more or less elaborate tracery of its own. The arched points of these windows, the Tudor style as it is often called, are frequently four-centered—the sharp curves in which the point starts soon die away into straight lines which really form a low gable.

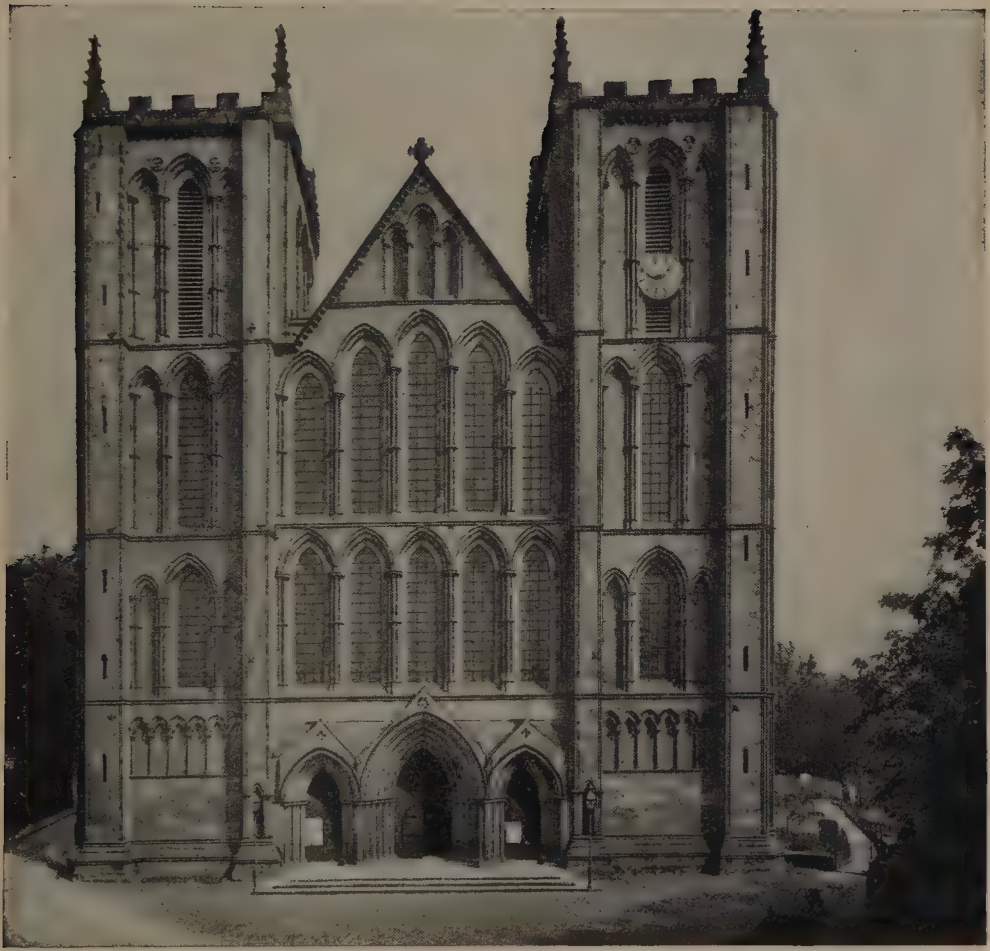
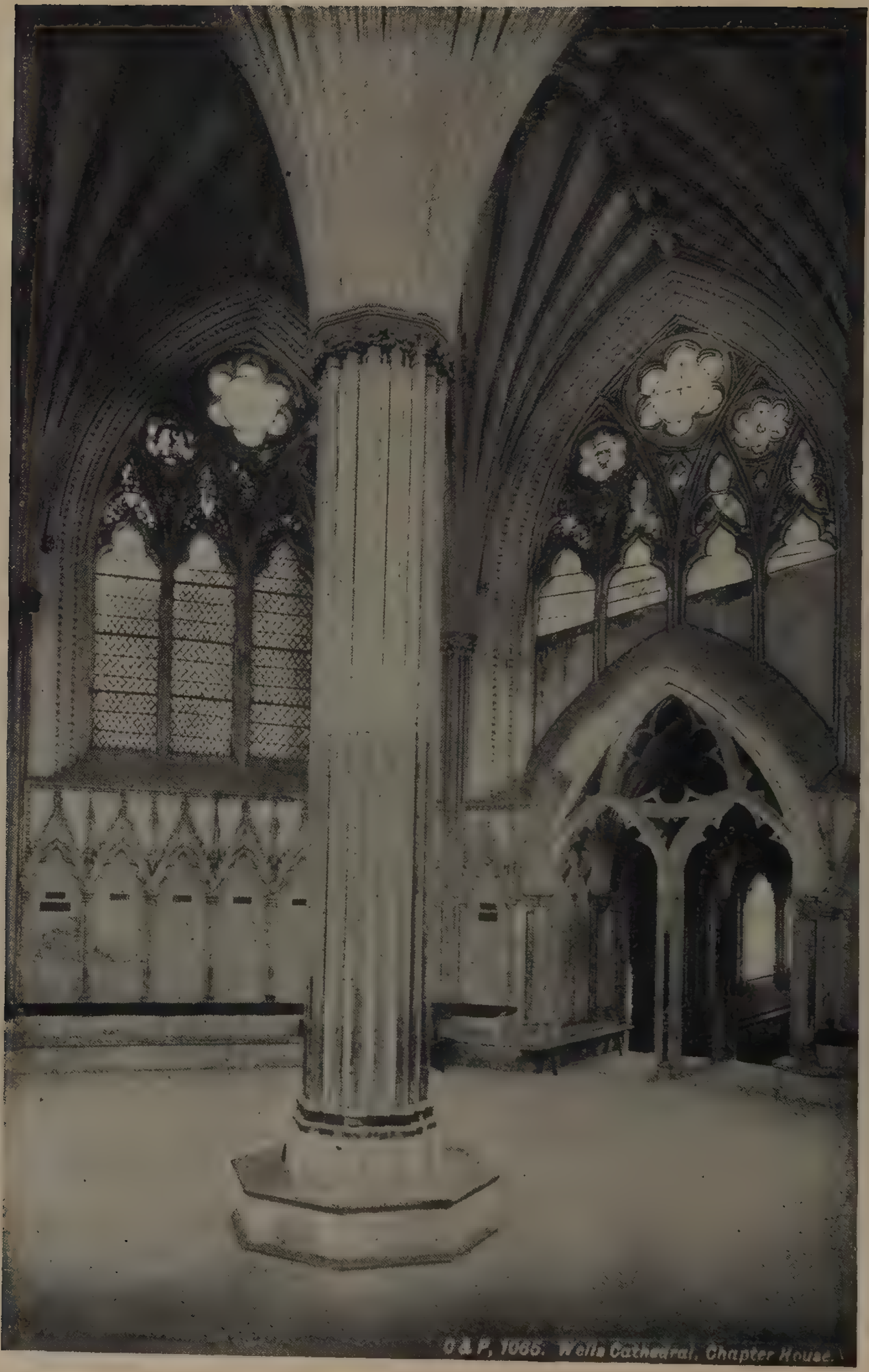


FIG. 122. RIPON. FAÇADE



G & P, 1065. Wells Cathedral, Chapter House.

Fig. 123. WELLS. CHAPTER HOUSE

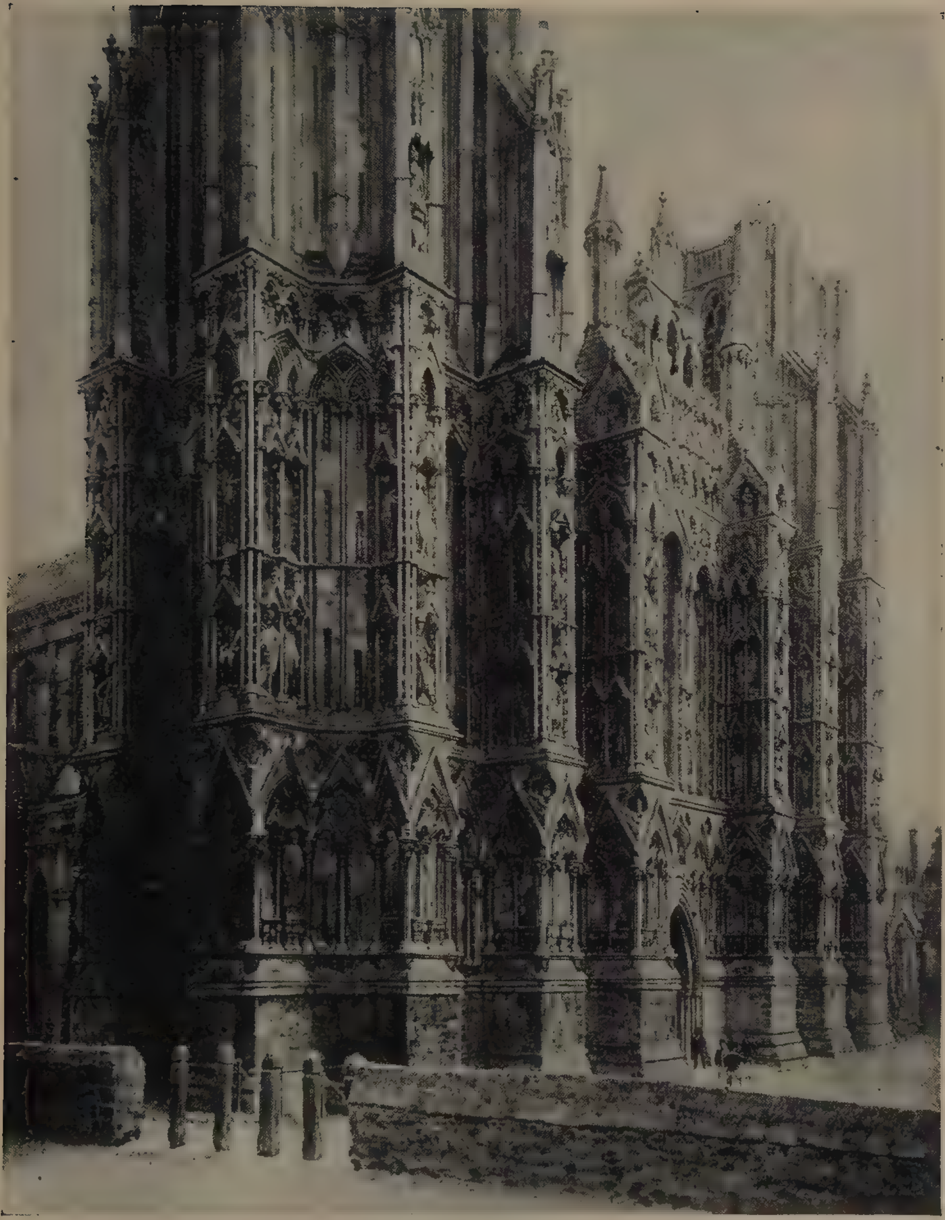


FIG. 124. WELLS (*after Rooke*). FAÇADE

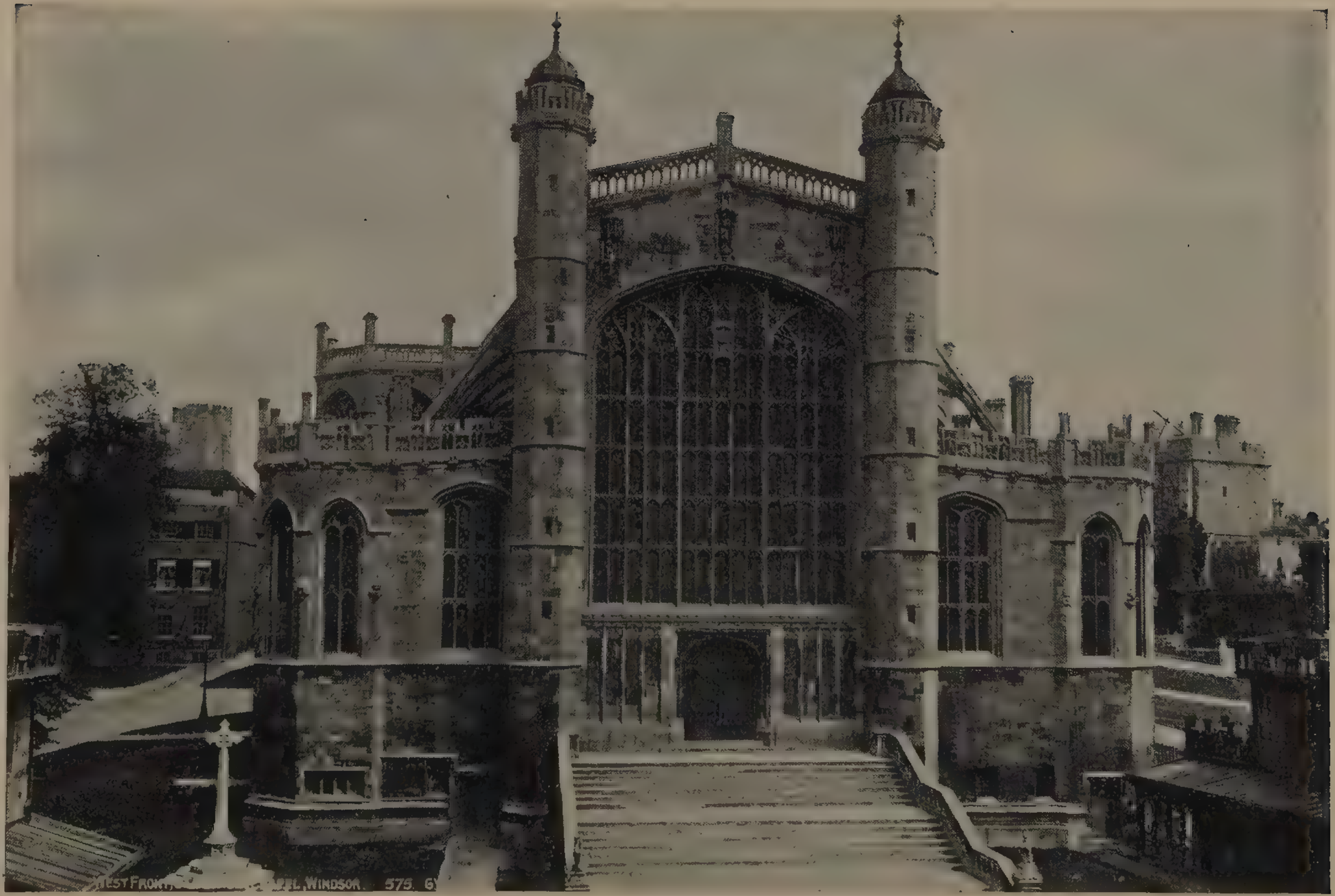


Fig. 125. St. George's Chapel, Windsor

There is nothing in the least resembling this English Tudor work in French Gothic design.

The piers of English churches are also unlike those of French, especially unlike the functionally constructive, compound piers of thirteenth century Gothic, such as those of Amiens. They are composed of more or less slender shafts (Fig. 126) arranged about a central

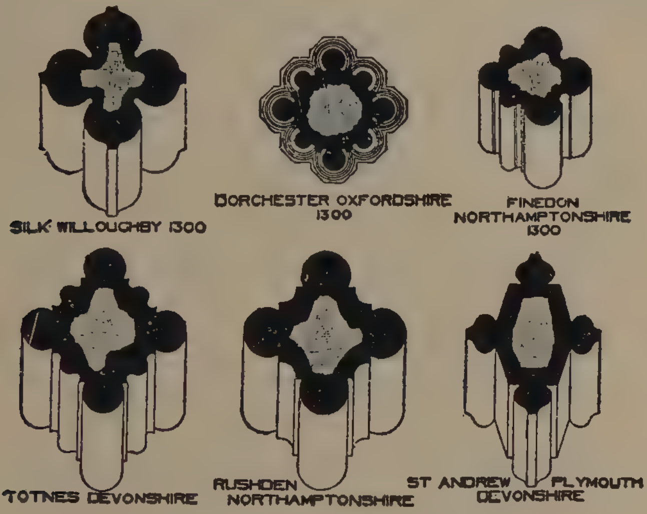

SILK WILLOUGHBY 1300
DORCHESTER OXFORDSHIRE 1300
FINEDON NORTHAMPTONSHIRE 1300
TOTNES DEVONSHIRE
RUSHDEN NORTHAMPTONSHIRE
ST ANDREW PLYMOUTH DEVONSHIRE

Fig. 126. English Piers, Sections

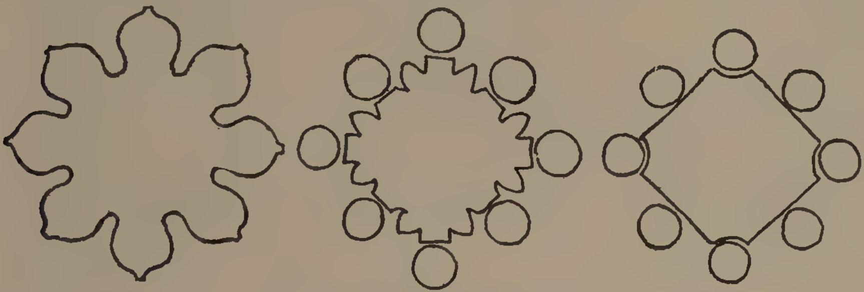


Fig. 127. English Piers, Plans

core (Fig. 127), sometimes attached to the core, often standing free by an inch or two of space between them and the core, in which case they are banded or tied to the core at different levels in their height by projecting string courses. As time went on, the number of these shafts increased until in late "Perpendicular" the pier came to resemble a bunch of vertical moldings, the cross sections of which, convex and concave, had no structural significance whatsoever. The same tendency early appeared in English archivolts, which finally came to be mere masses of delicate moldings piled one upon another. Often in such design the vaulting shafts, not logically arranged to carry their load of ribs, are supported upon brackets, which occupy the points between every two adjacent arches of the ground-story arcade. The famous "Angel Choir" (Fig. 129) of the cathedral of Lincoln, a work of the "Decorated" period, illustrates all these points, while Henry VII's chapel, before referred to, is a most striking example of the work of the "Perpendicular" period.

Fine and impressive architecturally as the English cathedrals are, and fascinatingly interesting as they must ever be to men of English tongue, they lack, as compared with French Gothic structures, many of the finest attributes of architecture, preeminently that quality of building design, in which every part performs an obvious function, while of itself the part is a

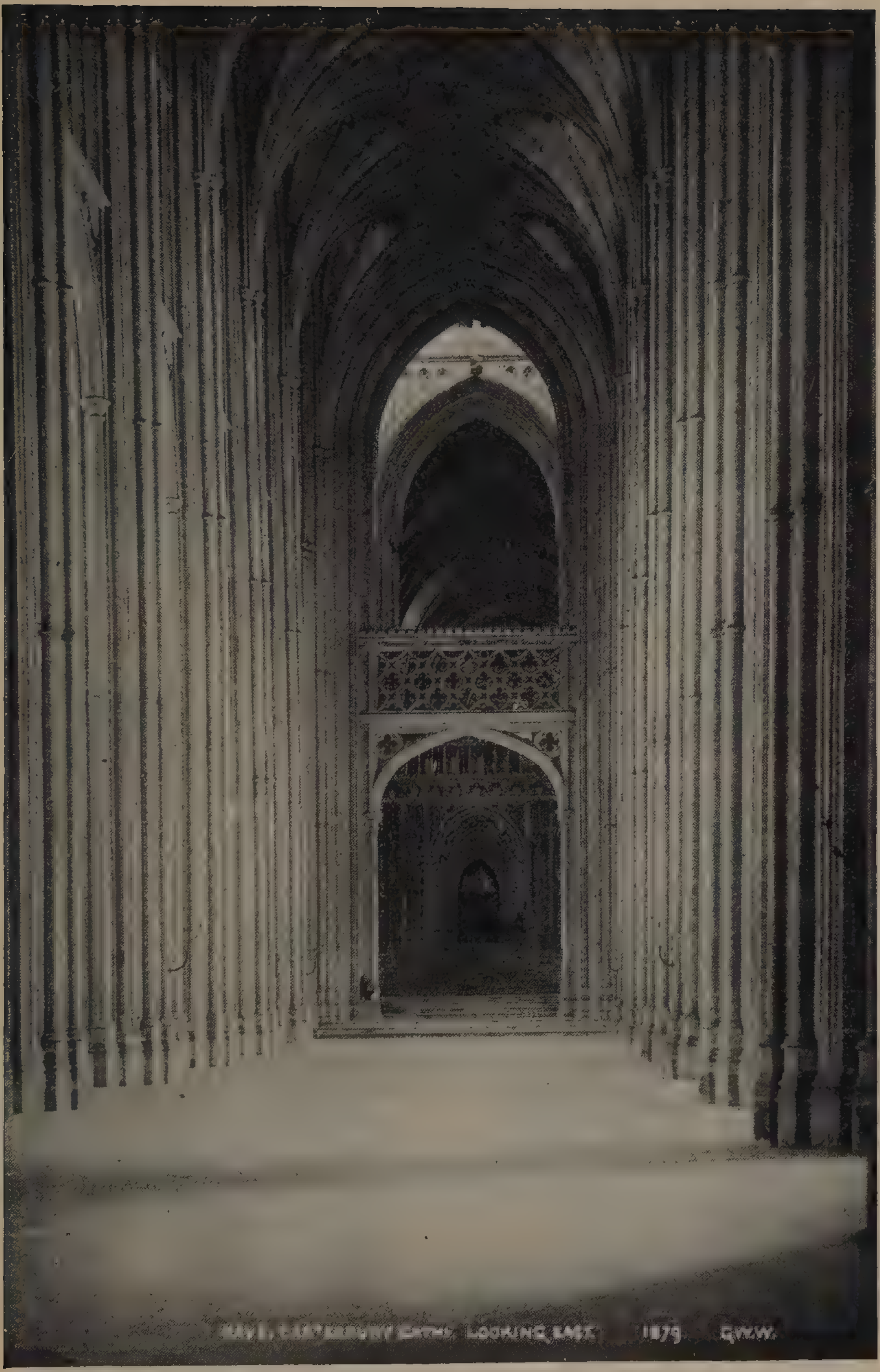


FIG. 128. CANTERBURY. NAVE, LOOKING EAST

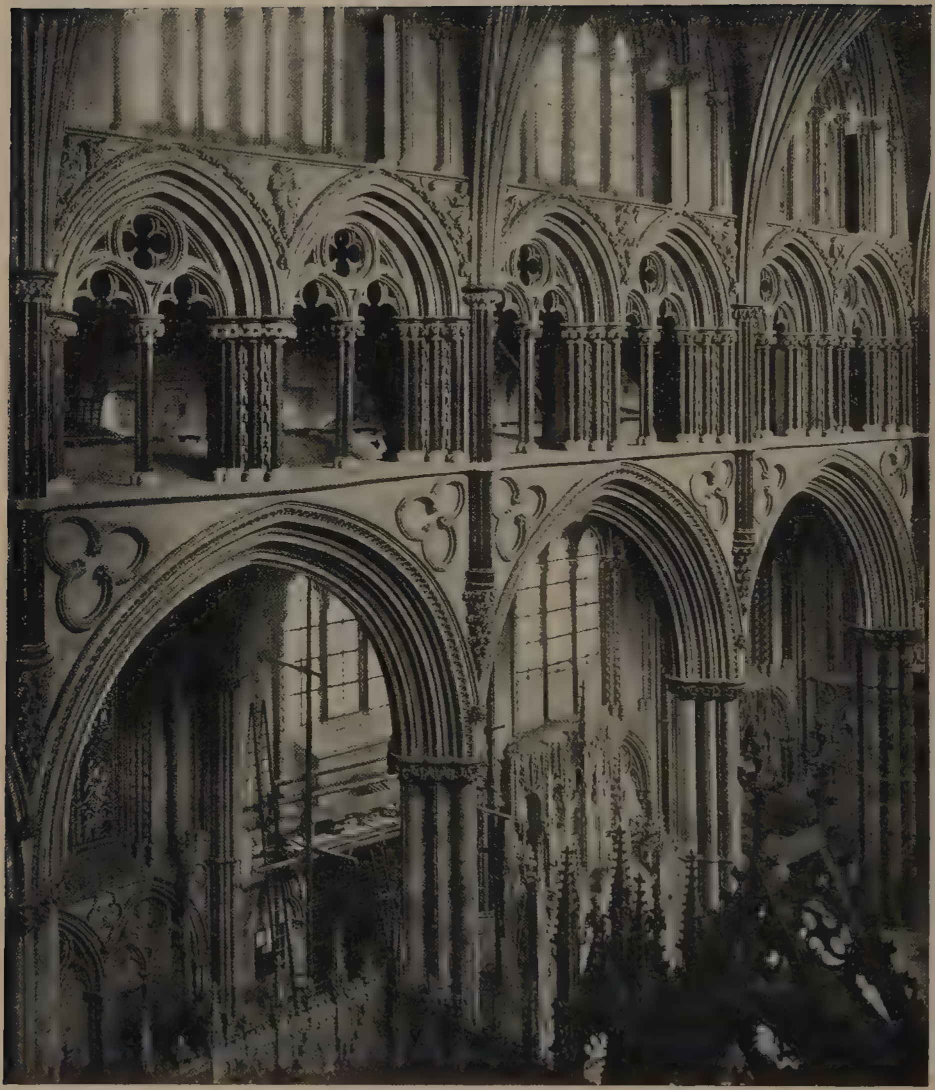


FIG. 129. ANGEL CHOIR, LINCOLN

thing of beauty. The simplicity that is sublime is not of the English pointed or Gothic style; of thirteenth century French Gothic it was the essence and life.

A superb feature of the English cathedrals is their towers, of which there are no finer examples than those of Lincoln (Fig. 130), especially the tower above the crossing of the transepts and nave. Its masses are finely proportioned, and its stories delightfully related to one another in height, while the very rich decorations are so carefully disposed as nowhere to conceal the fine effect of the great whole. They lend great dignity to a very noble pile.

Flamboyant design in France during the fourteenth century took the place of the restrained and beautiful Gothic of the thirteenth. The finely proportioned masses, severe forms and geometrical traceries of the earlier age, gave way to all sorts of extravagance, often exquisitely wrought and intrinsically lovely, but in no way expressive of the construction which it overlay, and in the end came to conceal. Extravagant and even fantastic elaboration, needless gables filled with tracery above portals, flying buttresses where they can have no possible structural significance, as at the base of a spire (Fig. 131), spires of tracery (Fig. 132), often described as "stone lace," the buttresses of façades built out (Fig. 133) in order to make the portals deep, interiors made to appear lofty by the omission of capitals at the springing of the ribs, ribs carved so as to appear to pass through one another, in short, all sorts of tricks by means of which stone might seem to be robbed of its natural characteristics and made to appear bendable and twistable; and this nowhere more than in window traceries—we find all these and many other pretty pettinesses in fourteenth and fifteenth century Gothic building in France. The church of St. Maclou in Rouen (Fig. 134) offers an excellent example.

Germany in the twelfth century was less favorable to architectural invention and development than England. In the first place the country had a splendid style of its own, Romanesque, which was so well suited to its needs, and so majestic, that little room seemed left for improvement. In the second place, no such upheaval and general unsettling occurred in Germany as took place in England after the Conquest, upon which a conflict of ideas followed naturally—such a conflict as is always one of the prime requisites for fresh and vigorous movements in art. When, late in the thirteenth century, the French Gothic style began to appear in Germany, its promoters' ambition was to copy, not to originate. The vast and splendid cathedral of Cologne (Fig. 132), the rebuilding of which in

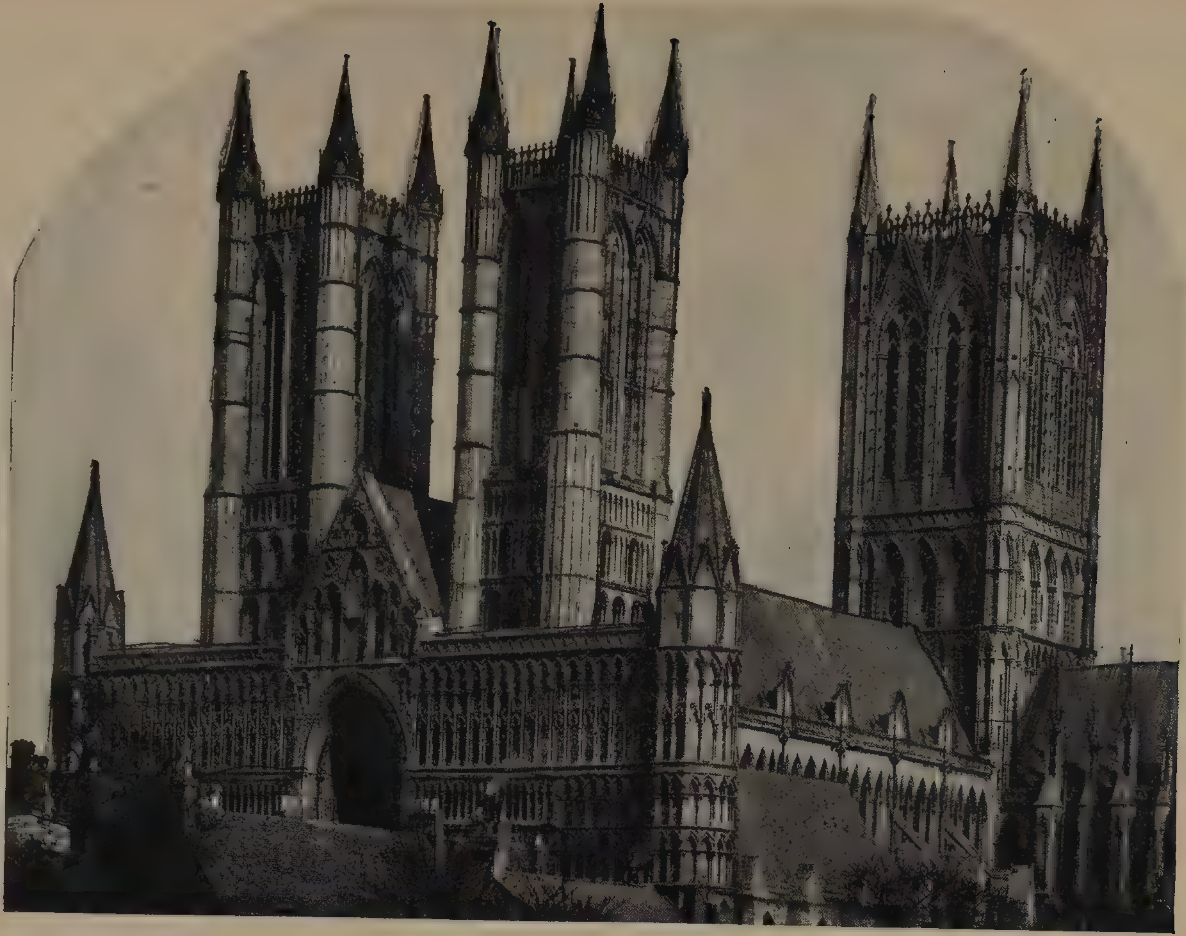


FIG. 130. LINCOLN. THE TOWERS

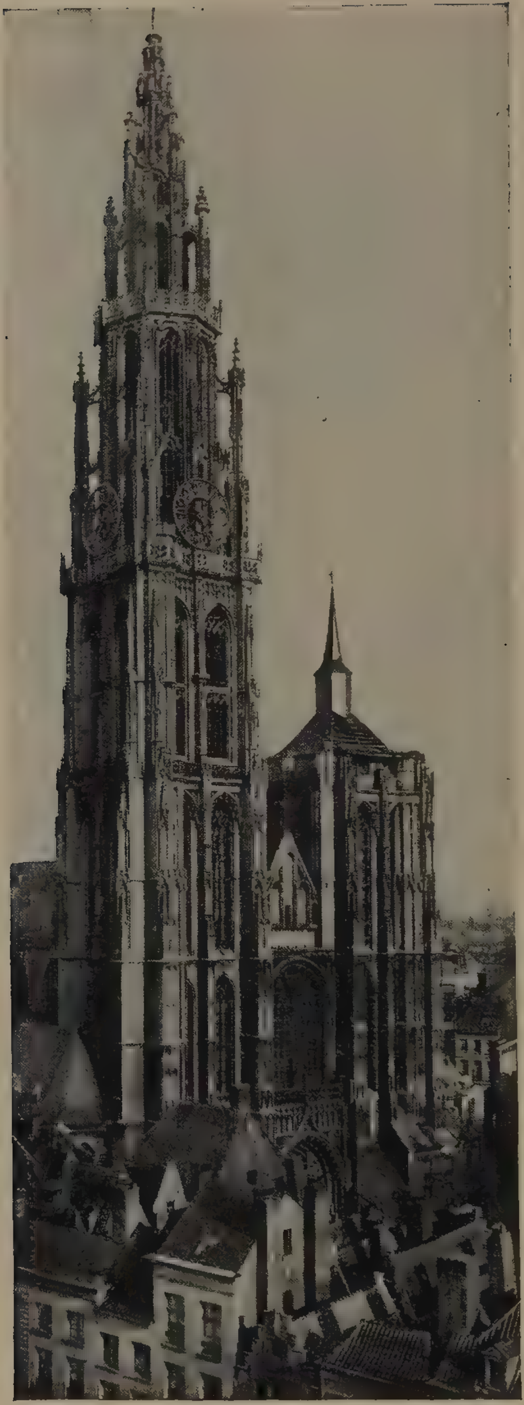


Fig. 131. Antwerp. Spire

the Gothic style was begun in 1248 and extended to 1350, is for the most part copied from the cathedral of Amiens, especially the choir. The gigantic towers are modern, but in the main follow the design of 1350, which was preserved by fortunate chance. French architects were often called upon to direct or assist in the planning and construction of German Gothic churches, and the style which is now called Gothic was known to the Germans of the thirteenth century as "French work"—the French style.

In Italy conditions were different from those found in any other country of western Europe. There, centuries of architectural tradition and the great number of imposing monuments come down from imperial times, constituted the round arch and the classical order matters of revered custom—almost of sacred authority, not easily to be changed. Moreover, as has been shown, the Byzantine style took firm root in North Italy, as the Mahometan and Saracenic did in the South, but as neither of these in any sense seriously shook or displaced Roman architectural tradition, so neither got a permanent or wide-spread hold upon the land. With the single notable exception of Lombard Romanesque, the Romanesque architecture of Italy—Pisa and Monreale for example—was not organic in the sense of being structurally progressive.

For a brief period, particularly during the fourteenth century, the Italians affected the Gothic of the North. They clothed their buildings in a Gothic garb of pointed arches, doors and windows; of spires, none of commanding size or beauty; of traceries, pinnacles and the many minor features of the style. As a matter of logical construction and organic design they never appreciated the Gothic of France.

Finally, the Renaissance with its unconquerable ambition to rehabilitate all that was Roman or classical, made quick work in displacing these borrowed Gothic notions among a people part of whose very birthright was the round arch and the Corinthian order. Italy speedily returned to her own and quickly threw aside her Gothic affectations. But while the Gothic spell lay on the Italians they produced many remarkable pointed buildings; some, as lovely witnesses as architecture has ever had; more that are the disordered productions of men wholly ignorant of what they were trying to copy. Of the former sort is the Campanile, or Bell Tower, of the Cathedral of Florence (Fig. 135), Giotto's Tower, as it is called after its famous designer. Of the latter, is the Spina Chapel in Pisa (Fig. 136), a chapel built for a thorn from the crown of thorns, hence the name Spina, which means thorn.

Giotto's Tower is square in plan, two hundred and

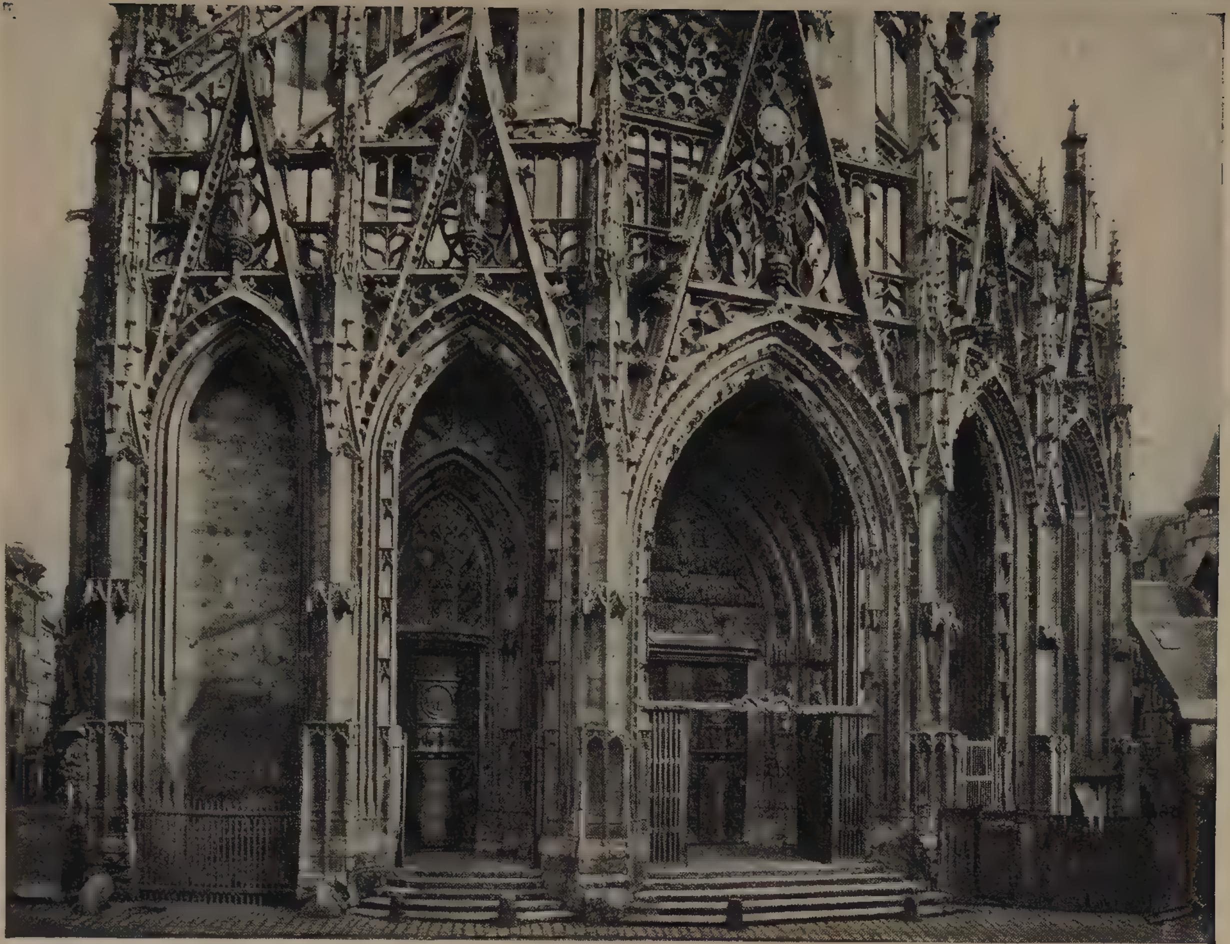


FIG. 134. ST. MACLOU, ROUEN. FAÇADE

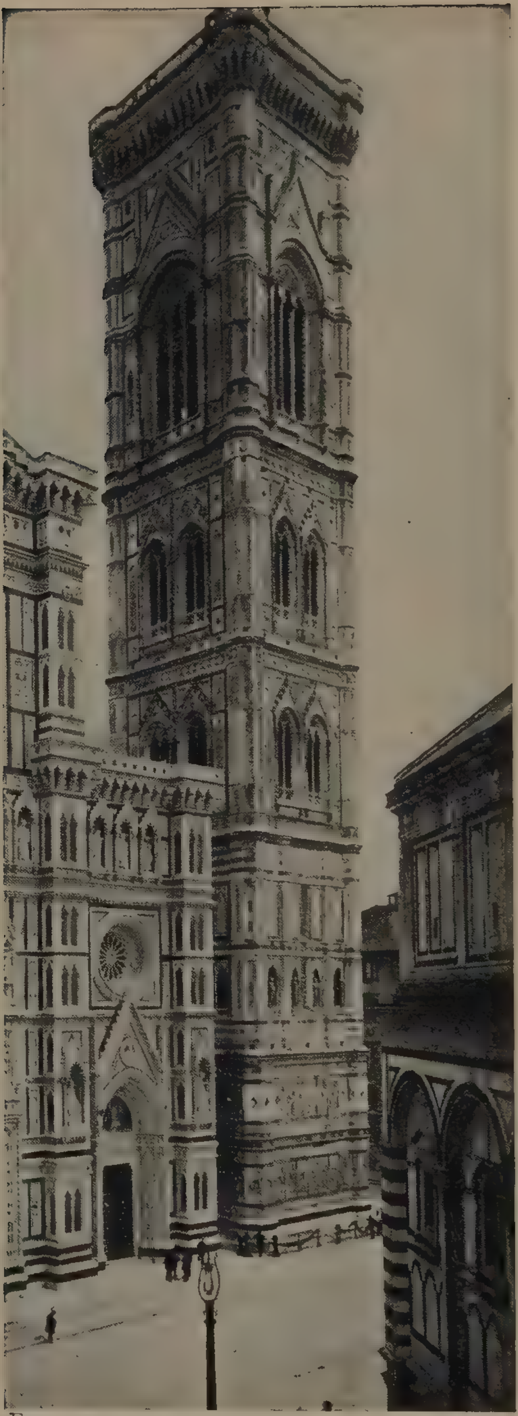


Fig. 135.

Giotto's Tower, Florence

seventy-five feet high, with its four angles emphasized and strengthened by octagonal turrets. The walls are thick, and the interior is divided into chambers by intersecting vaults of flattened section. It is the external design of the five stories which constitutes the just claim of this Campanile to possessing extraordinary beauty. The design is organic in a high degree. The fact that the nearer the top the less is the weight to be supported, is expressed by the increase in the height and breadth of the windows. The lowest story is decorated with two bands of bas-reliefs, the lower hexagonal and the upper diamond shaped, so small and so exquisitely chiseled that they become objects of the greatest interest to one so near the tower that he ceases to see it as a whole; but to him who is at a distance, not conspicuous enough to withdraw attention from the simple massiveness proper to the basement of a tall slender tower. The upper section of the basement is likewise divided horizontally into two bands; the lower, a series of shallow niches, separated from one another by pilasters, in which, standing each beneath a pointed canopy, are the statues of prophets and saints; the upper, a flat surface covered with a surface pattern of forms like the niches below, laid up in black, green and pale pink marble. The next two stories in upward order are occupied by twin openings, the lower round, the higher pointed, beneath carved gables. The top story has a single large triple-divided window. A deep overhanging cornice and an open parapet crown the whole.

Throughout this design there is unity, unity in the whole and in the parts. When the individual elements, the stories for instance, are examined, each is found to be complete in itself, to have its own base and crown, foundation and cornice, as has the whole tower. But the effect of these horizontal members, which in many buildings give the stories the appearance of so many boxes piled one on another, thus tending to lessen the look of height, as well as solidity, is here counteracted by the vertical lines of the angle turrets, the pilasters below, and the twisted spiral mullions of the windows above, as well as by the vertical lines of the decorative inlays. It is this tower which Ruskin speaks of as "that serene height of mountain alabaster, colored like a morning cloud and chased like a sea-shell"—a splendid piece of architecture, but as unlike the towers and spires of Chartres and Senlis, or any other French Gothic church, as it is possible to imagine.

In the gigantic nave of the cathedral close by, of which Giotto's Tower is the belfry, there are piers carrying an incomplete set of vaulting ribs. The thrusts of the vault are met and stayed by comparatively massive walls. Further, the vault thrusts are

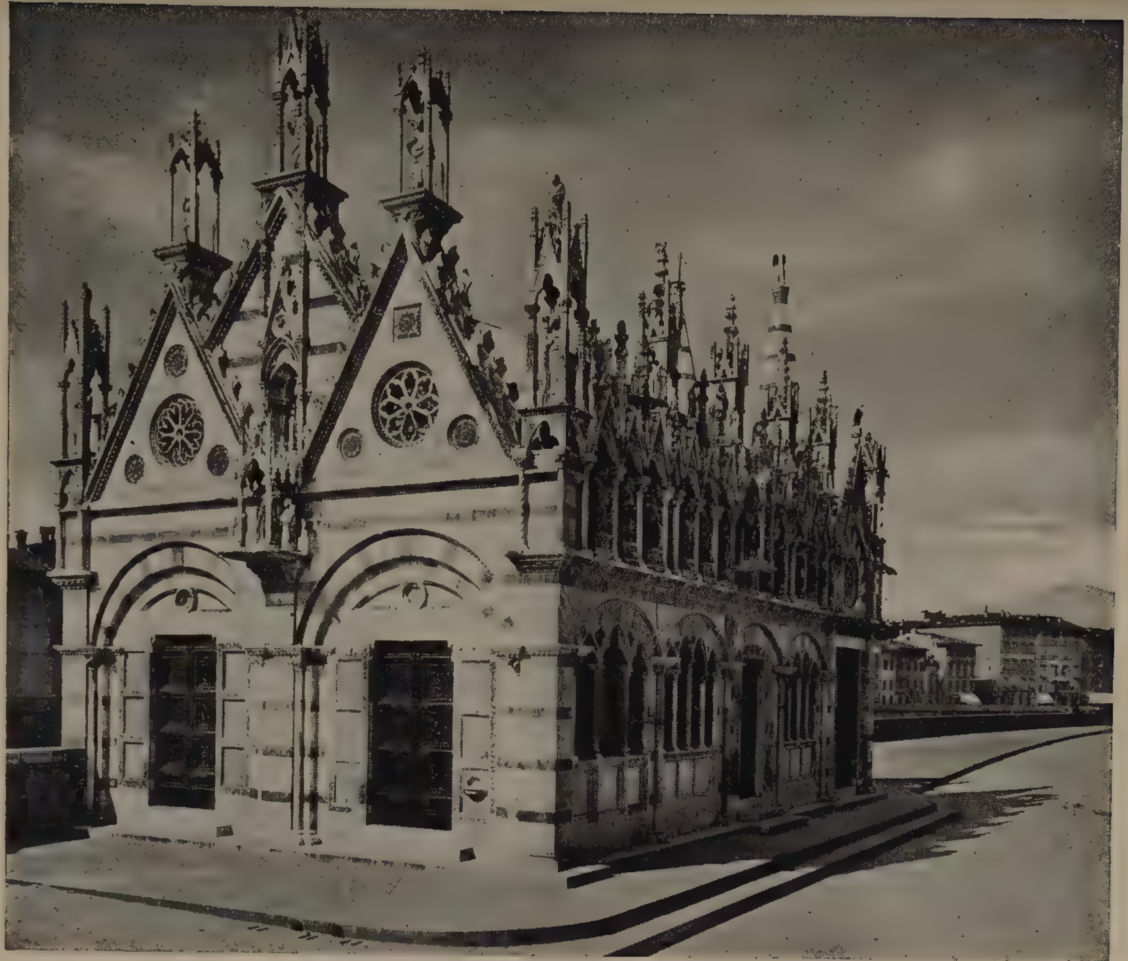


FIG. 136. THE SPINA CHAPEL, PISA

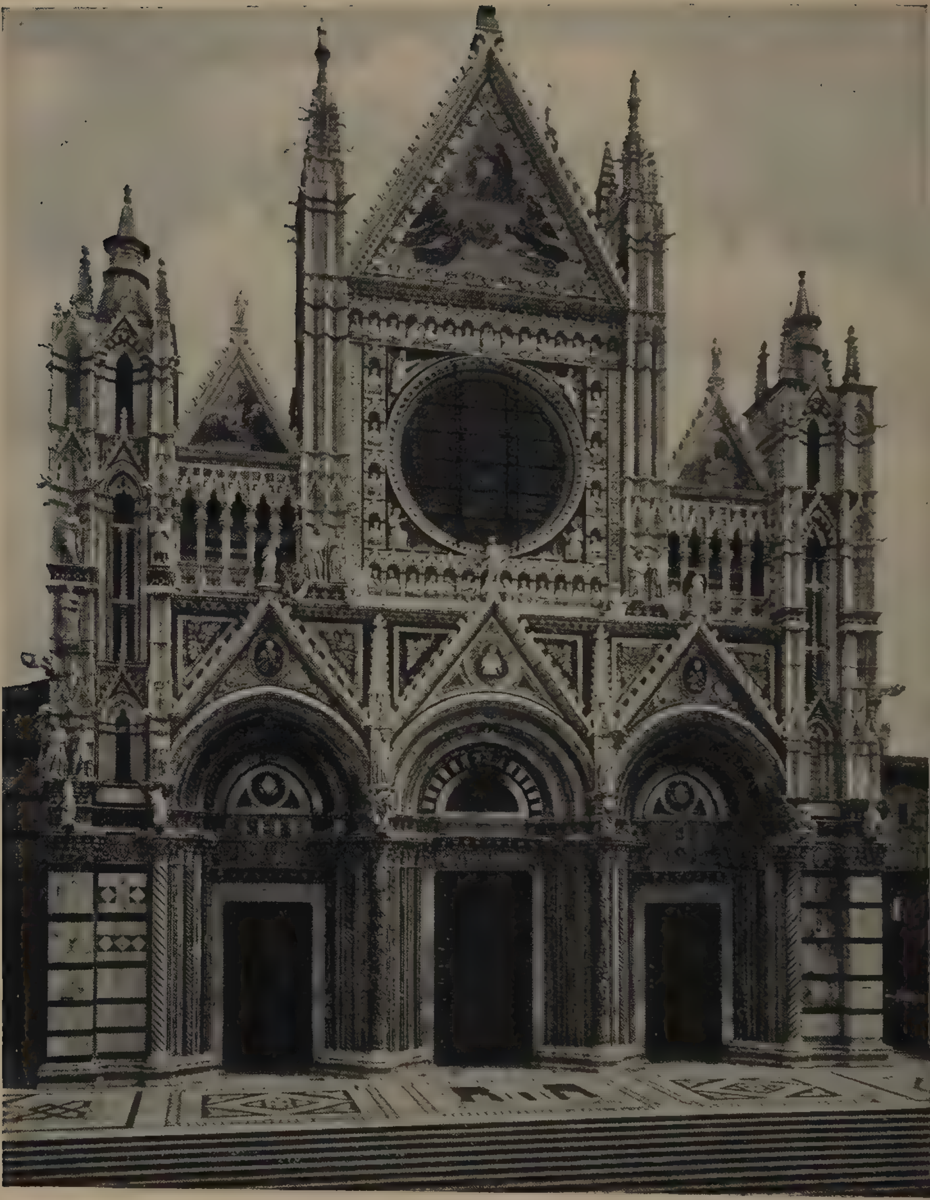


FIG. 137. SIENA. FAÇADE

lessened, as was customary in Italian buildings of the Middle Ages, by tie-irons linked across from one side of an arch to the other. It is by no means a work of constructive or finely logical genius.

The type of Italian Gothic front is one in which little or no regard is paid to the internal structure of the building. They are often scarcely more than great screens such as that of the cathedral of Siena (Fig. 137), on which pointed or Gothic details are exquisitely wrought in beautiful marbles.

The small and extremely ornate chapel of the Spina (Fig. 136), in Pisa, consists of an oblong room covered by a low, trussed, gable roof. The fronts, really the ends of this building, are made up of double gables set side by side, with a third higher gable between them. These gable façades are merely marble screens, curiously unmeaning, overlaid with wonderfully rich canopied pinnacles and niches, as are also the sides of the building. The chapel looks like an exaggerated, highly extravagant, carved jewel casket and is, considered as a work of architecture, little better than childish—an extremely pretty object, in no way commanding or expressive of reasoned thinking, or, as Lowell said of real Gothic, is the pretty Spina, "Imagination's very self in stone."

Spain, in such Gothic churches as that at Burgos

(Fig. 115), boasts some of the most splendid buildings in existence, yet Spain during the thirteenth century followed the Gothic lead of France more carefully than any other European country. In Burgos, however, the buttress, pier and rib system is not so designed as to make the vaults secure without a massiveness of wall which is distinctly contrary to the fully developed Gothic principles of the thirteenth century as displayed in such structures as Amiens. The façade of Burgos is planned on the lines of a French façade of the best time, and many of its details are characteristic of the purest Gothic. The spires, of later date, are not well conceived in relation to the towers. They are of the German, open-tracery sort, resembling, though much inferior to, those of Cologne.

The Netherlands came, like Spain, under the Gothic influence of France, but did not attain to any such perfection of copying. The most important so-called Gothic building of the Low Countries is the cathedral of Antwerp, chiefly remarkable for its width—it has seven aisles—and its lofty, much-admired spire; a construction of wonder rather than beauty, when compared with a French spire such as that of Senlis (Fig. 119). No single illustration serves to distinguish so clearly between what is reasonable, in reality and in appearance, and what unreasonable, as the flying buttresses of the spire of Antwerp placed where they obviously can not be a source of strength; where they can not do what they appear to be doing, namely, resist thrust; and the pavilion roofs about the base of the Spire of Senlis, which, so placed as not only to appear to be a source of strength, in reality are a source of strength. In one case the ornament of the spire, those flying buttresses of Antwerp, is constructed solely for the sake of decoration. In the other case, Senlis, those high, slanting masses of wrought stone, the roofs of the pavilions, so ornamental, were constructed for the sake of reinforcing and strengthening the actual fabric. This distinction rests upon a rare faculty of the human mind—the power to mark the difference between sensations produced by what is merely novel, and those produced by what is beautifully reasonable, hence truly lovely. In matters of architectural design this faculty, by its presence or absence, implies a cultivated practise of the art, and cultivated appreciation of it, or an ignorant practise, and ignorant understanding which is no understanding at all. This is as true of the twentieth century as of the thirteenth or fourteenth.

To make a brief summary, it may be said that the Gothic style, at the time when it reached the highest point of reason and logic, attained constructive equilibrium by opposing one set of forces, or thrusts, to another. This found visible expression in two wholly new and characteristic features—the vault supported on an independent skeleton of pointed arches, and the flying buttresses.

The style seems to have had its origin in central France, and there has left its most notable achievements. Because of its impressive and beautiful character it was adopted in other countries, sometimes with such thorough appreciation as to make it the source of architecture of the very finest description, at other times with such a total lack of understanding as to make it the source of absurdity and ugliness in architecture.

Furthermore, it must not be forgotten that the Gothic style developed gradually, and in many buildings, in many lands, never more than partially replaced Romanesque custom, or rebuilt portions of older Romanesque structures. It rose slowly and irresistibly like a normal tide, transforming all to its own likeness except the high and the inland places, i. e., those places of Europe and England where the Romanesque was altogether satisfactory, where a fine conservatism resisted innovation, or where dulness failed to comprehend the possibilities of the benefit and improvement that might come of change. As this tide began to subside, and its freshness stale, Gothic forsook its true grandeur of manner and frittered itself away in a triviality of innumerable details. It may be said to have died a flamboyant death. While this was happening, the ideas of the Renaissance appeared—no normal tide, but a tidal wave—and swept Europe and England, transforming all without exception, high places and inland places, to its own likeness, which was a more or less broken reflection of what had been Roman, of Roman architecture in its great rôle of chief art in Roman civilization.

CHAPTER X

GOTHIC SCULPTURE, PAINTING, STAINED GLASS, METAL WORK

One other element, wholly new and wholly characteristic, in the development of Gothic art was the direct and artistically intense study of nature which its devotees inaugurated. This of course applied mainly to the decorative sculpture of the Gothic period, although its influence for good is plainly discernible in every least as well as most important of the allied arts, plastic and graphic, that found a place in the general movement.

Mediæval scholars constantly made use of the phrase *omne scibile,* meaning the sum of knowledge recorded in writing. More than one such scholar undertook to master the *omne scibile,* and it is probable that more than one succeeded. Great as the total sum of learning was, it was not beyond the mastery of a brilliant mind. It was not unusual for a scholar to undertake to set the then entire sum of knowledge into orderly written sequence—in a word, write an encyclopædia. St. Louis commissioned a learned monk, Vincent of Beauvais, to do this very thing, and the title of his book, *Mirror of the World,* suggests the *omne*

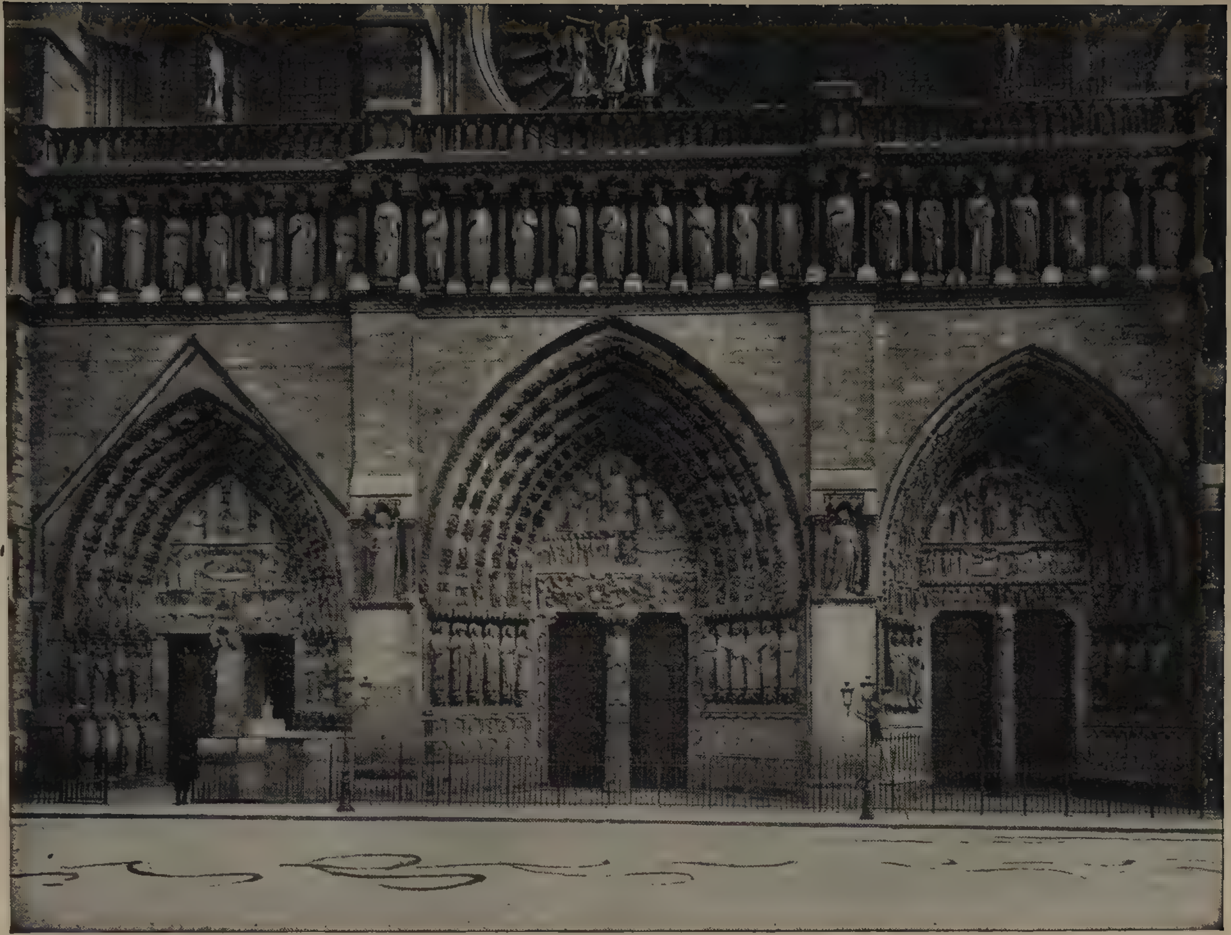


Fig. 138. Paris. Portals

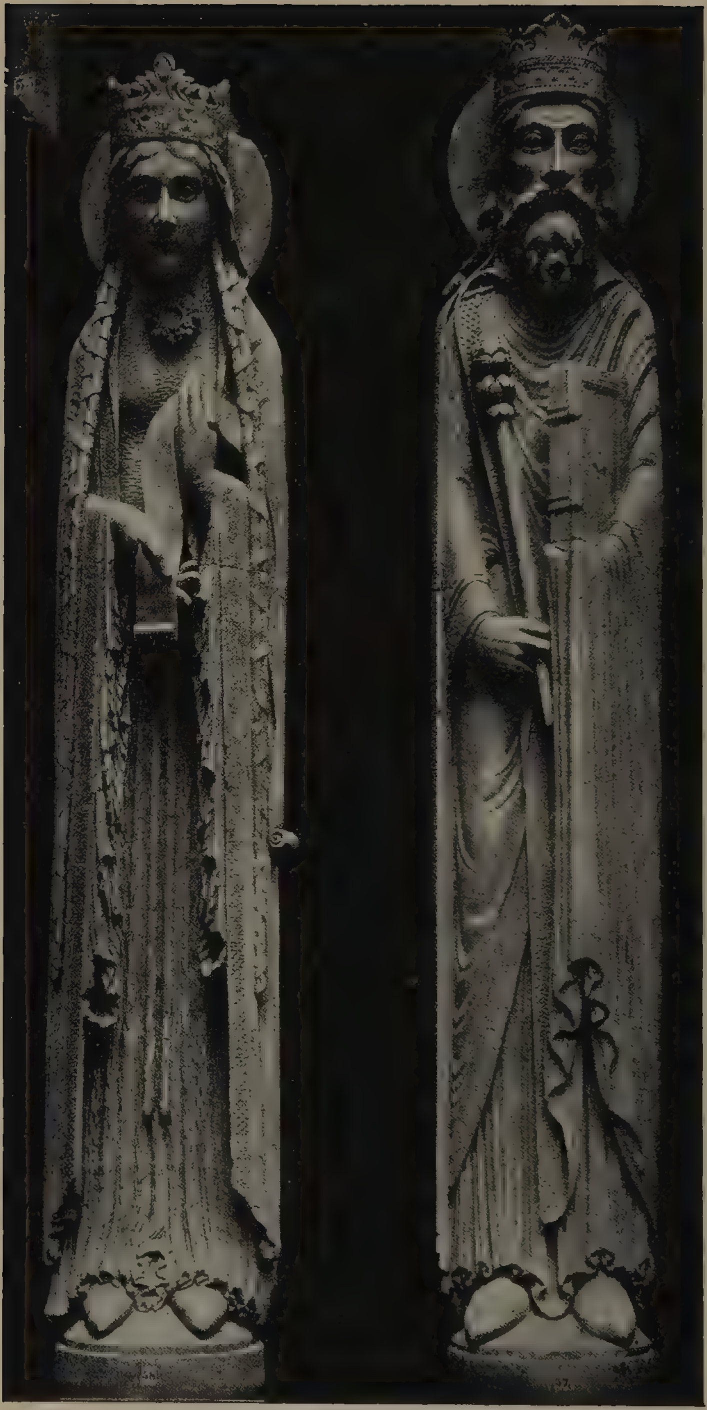


FIG. 139. CHARTRES. SCULPTURE

scibile. The sculptors and painters of the Middle Ages, especially those of the thirteenth century, undertook to produce a counterpart of such books in carving and color, in decorations, works of art, representations, clear and precise, of all that was at the time known concerning sacred history, mental and natural science, theology, and life generally—decorations that were primarily regarded as instruction for the mass of mankind who had no books, and did not know how to read, but could and would understand the *omne scibile* when presented in sculpture, blazoned in stained glass, or pictured on inlaid pavements. Stone and glass in the age of St. Louis were made the conveyances of information to the commonalty. They were given interesting and lovely forms by the cunning hands that wrought out in effigies, so beautifully and so completely, the whole intellectual system of a highly imaginative, highly reasonable society.

The west front of the Cathedral of Paris (Fig. 138) is a vast treasure house of early thirteenth century sculpture, sculpture in the full round, and bas-relief. Much of it is intact and much is entirely original work, especially that above the doors and on the archivolts. From this assemblage of figures the awkwardness of twelfth century art has gone completely. Restraint remains, but it is a restraint altogether compatible with grace and dignity, in a word, with naturalness. In those deep portals, the darkness of shadow is never wholly conquered. In their arches, and along their walls, a solemn prelude to the sacred offices of the interior is forever being played.

The west front of the Cathedral of Chartres displays the sculpture of the mid-twelfth century at its best—sculpture that differs in style from the usual Romanesque because it has lost some of the unmeaning rigidity and utter lifelessness of work done under the then existing influence by Byzantine art, and by men who were beginning to look with sharp eyes and gentle hearts directly on nature. Another difference between this extremely early Gothic sculpture (*circa* 1150) and Romanesque, exists in the increased degree of real portraiture in the faces of the figures of Chartres (Fig. 139) as compared with Romanesque heads, for example, those of the portal of St. Gilles (Fig. 83) or over the door at Ely (Fig. 102).

St. Paul's "Faith is the substance of things hoped for, and the evidence of things not seen," is as truly and comprehensively descriptive of the intellectual and moral temper of the Middle Ages as words can be. It is precisely this that the serene but never dull-faced watchers in stone, beside the cathedral doors of Chartres (Fig. 140), make one think about—what they are thinking about, because it was what their makers thought about. They are living work because they

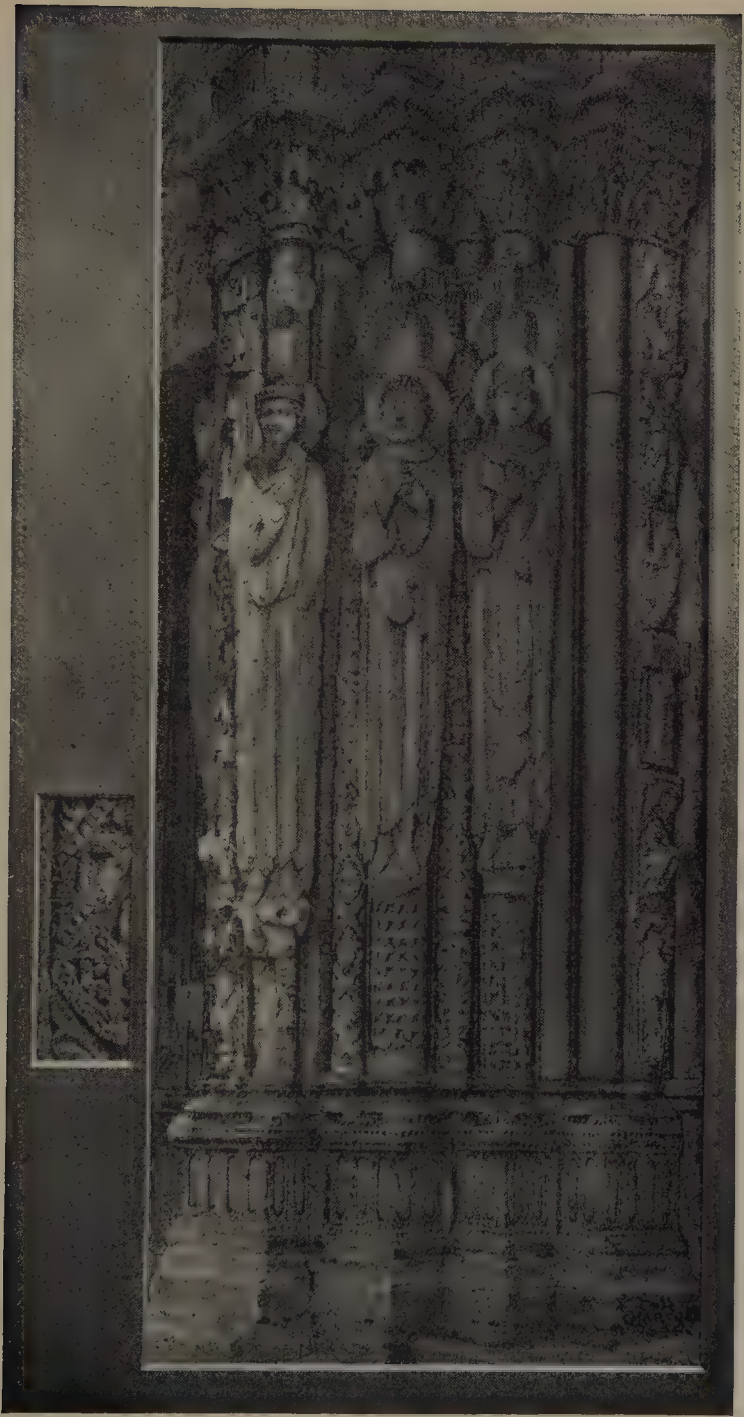


FIG. 140. CHARTRES (*after Rooke*). SCULPTURE

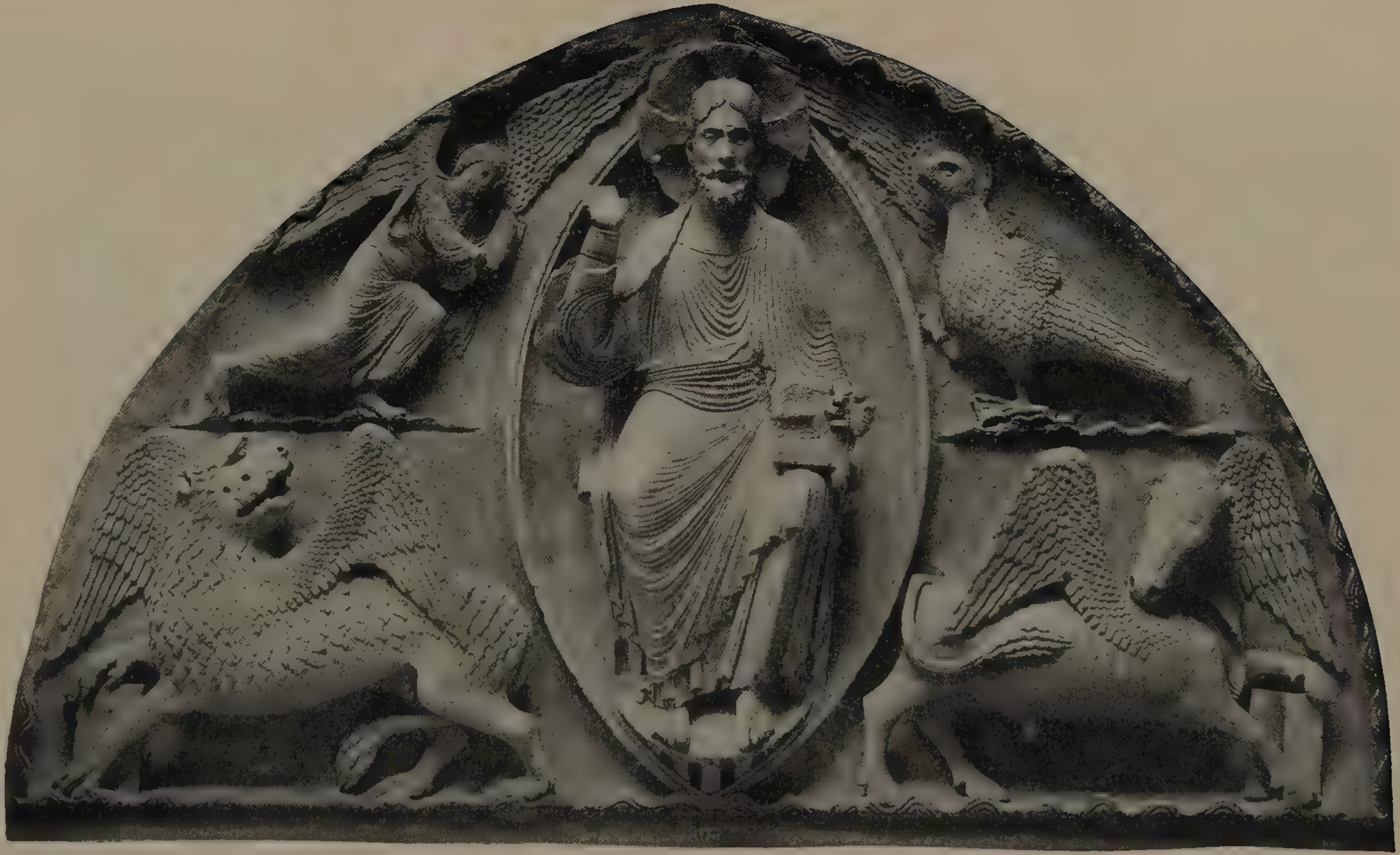


FIG. 141. CHARTRES. TYMPANUM OF WEST PORTAL

bear the eminent sign of real life—the power to think, thought expressed in the features of man's face. Eternal calm is written on their quiet visages, likewise eternal activity. While they express living, fleeting moments in time, they are conceived "under the form of eternity" as all the things of great art always have been and must always be. Carlyle's "Every one of us is a Ghost. Sweep away the illusion of time: glance from the near moving cause to its far distant mover; compress the three score years into three minutes—are we not spirits that are shaped into a body, into an appearance and that fade away again into air and invisibility?" These sentences of the last of the greater prophets make the Middle Ages understandable. The holy figures of this church gate (Fig. 140) are true likenesses of the spirits of that day—"shaped into a body, into an appearance and now long since faded away into air and invisibility." They are true portraits for they bear clear evidence in their mien of those things which they believed, i. e., for which at all times they were ready if need be to yield up their bodies and fade into invisibility.

Lovelier disposition of locks and braids of hair (Fig. 139), more kingly wearing of crowns, more maidenly wearing of veils is not conceivable; individuals, one and all, types of deeply inquiring faith and reverence, not of superstition—unthinking veneration which is the worst mock that can be put upon true reverence. Curiously straight figures; strange vertical folds of drapery more like the fluting of columns than folds in cloth; extraordinary, close pressing of arms and hands against bodies; highly unnatural—these are comments invariably passed upon the figures of the front of Chartres by people who give them only the passing attention of a passing smile. But very different are the criticisms of those who stay long enough to make their acquaintance; those who make friends and who are longer with them, for it is a fact that friendship, true understanding, is little easier formed with men than with works of art—the works of men. Acquaintance here, as in the world of flesh and blood, often masquerades as friendship.

The fact is that these "straight figures" (Fig. 140) are marvelously right in the places which they occupy on the straight and vertical columns of massive piers at the base of one of the most colossal piles of stone ever raised skyward. They tell their own story, moral, intellectual, religious. To do this they must be present. On the other hand, they do not conceal or confuse a principle of building construction essential to safety—the verticality of supporting shafts. Far otherwise, for they emphasize the upright nature of the columns—every one with his flute-like folds of drapery and his close-pressed arms and hands. Architecturally speaking they are there on sufferance. Theologically speaking they are there of necessity. They are the body, they represent the reality of the spiritual Church, and they are legitimate members of the body of the physical Church. Never has conception of spiritual meanings found a more exquisite correspondence in the forms of matter. True portraits of the age of St. Louis and his immediate predecessors, these stone figures of Chartres offer marvelous illustration of the laws of decorative detail in connection with architecture, applied with intense love and absolute rightness. It should be noted with careful understanding that these figures in no way break the continuity of the shafts which rise above the heads of the figures, and are crowned with capitals from which the archivolts spring; that the whole is a matter of strict, constructive logic at every step; that all this sound construction is afterward given significance, and some degree of decorative realism, by reason of the stone effigies. Finally, the beauty of formal detail, for example, the patterned hems of the robes of this king and queen of Chartres (Fig. 139), the leaves and jewels of their crowns, the flowers of the king's scepter, the queen's long ribbon-bound braids of hair, are all alike works of carefully thought-out design, of orderly arrangement of exquisite forms, gathered into wonderful harmonies of line and spot and space; design truly, that which comes directly from the mark, *de signo*—from the marks, in the present case, of the chisel on the stone, the chisel-hand following with utmost accuracy the dictates of a thinking, beauty-loving mind.

At a glance it is evident that the portals of the west front of Paris (Fig. 138) are in the main similar to those of Chartres, but, as has been said, the awkwardness of twelfth century figures, that awkwardness which is not compatible with grace and naturalness, a quality that does undeniably, with all their artistic virtues, still adhere to the figures of Chartres—that this awkwardness is utterly cast off by the guardian statues of the west gates of Paris. The pose of these figures and greater freedom of their draperies, in fine their perfect naturalness, together with the restraint observed by the sculptor in making them fit for their architectural positions, is a feat of consummate artistry. But on the side of structural design, the manner of concealing the slender shafts behind the figures, and suppressing the capitals—they are suppressed by the permanent shadows of the projecting canopies—really springing the archivolts from brackets, and not as in Chartres giving them evident continuous support from the ground up—on the side of organic structural design, the doorways of Paris are inferior to those of Chartres.

The way in which personage upon personage of

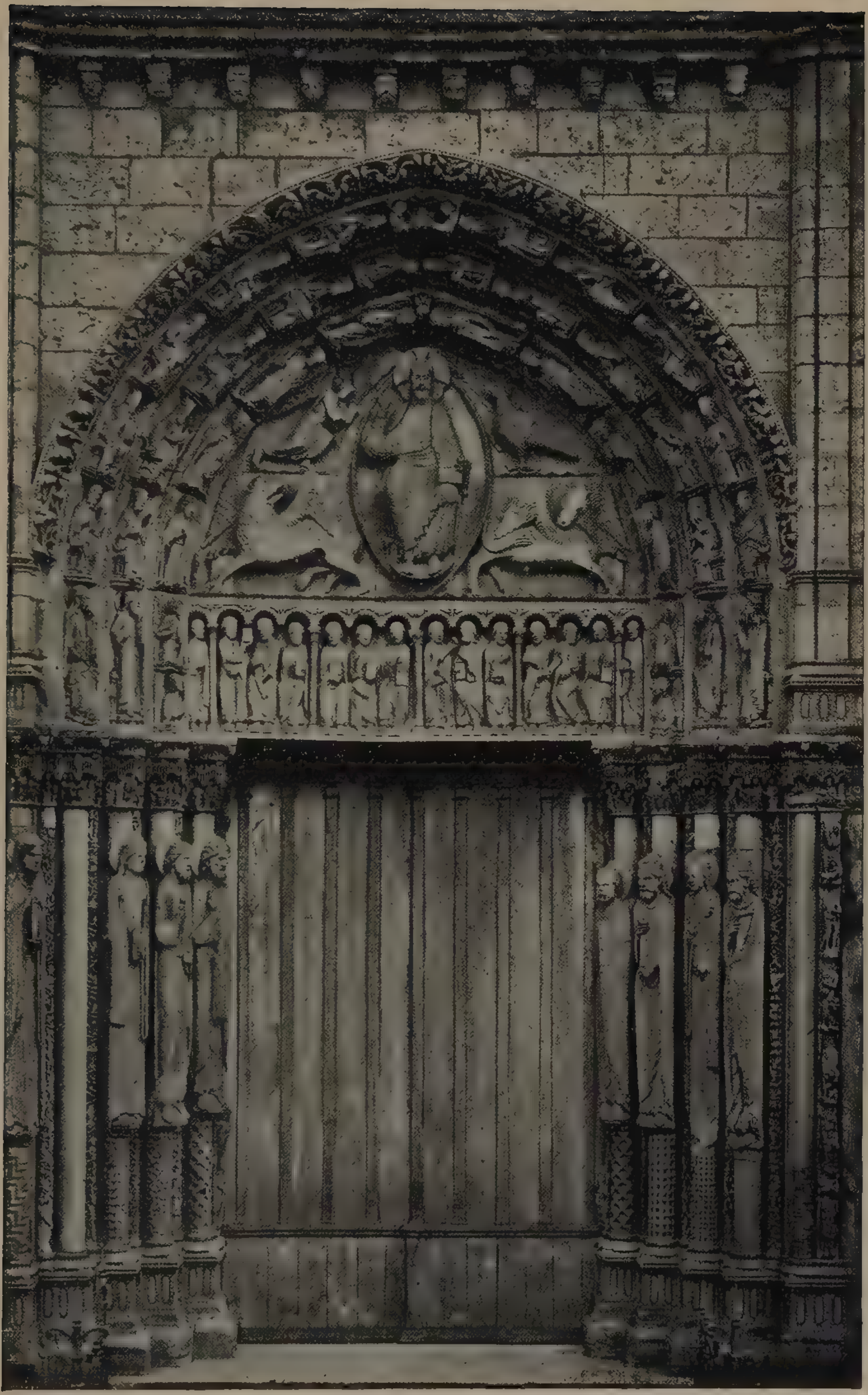


FIG. 142. CHARTRES. PORTAL

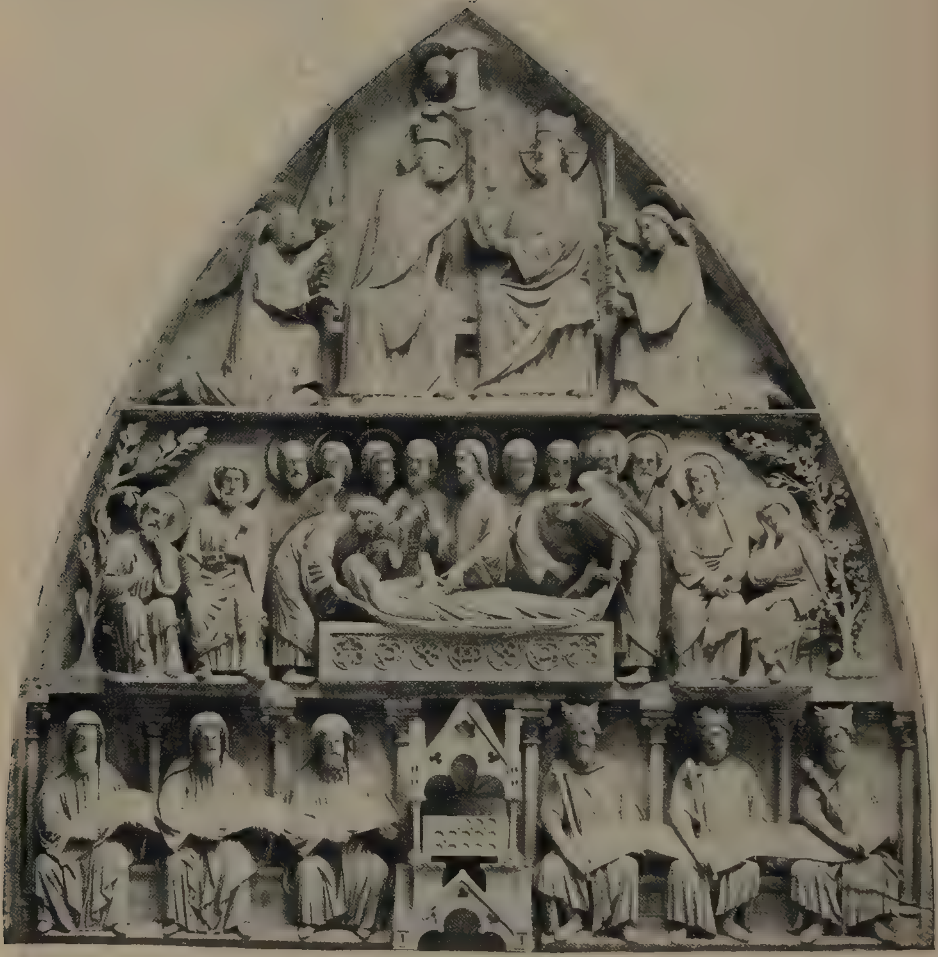


FIG. 143. PARIS. TYMPANUM OF WEST DOOR

sacred writ is fitted into his place in the lofty archivolts of the central arch, four archivolts on either side, with double inner archivolts filled with seraphs and cherubs, or similarly in the porch of Bourges (Frontispiece), every one emphasizing by his individual pose the curves of the splendid pointed opening wherein he is a dweller; every one, by his attitude and expression, emphasizing the doctrine of free will—human right to choose coupled with responsibility for the choice—as he gazes on the Resurrection of the dead and the Final Judgment, the central doctrine of all philosophy and theology throughout the Middle Ages—the way in which these ends were attained, and faith and intellect and beauty served, is beyond praise. Beside these archivolts those of Chartres are scarce more than child's play, though the play of very remarkable children in the family of artists.

So too is the bas-relief on the tympanum of Chartres (Fig. 141), as compared with that of the left-hand door (Fig. 143) of Paris. There is in spite of awkwardness (it far exceeds that of the figures on the jambs below) and an utter want of emotional character in the figure of the Christ of Chartres (Fig. 141), within His almond-shaped glory surrounded by the unearthly animals which symbolize the evangelists—there is none the less, about this figure a great deal of "that tremendous majesty, that awful kingship," which the Middle Ages ascribed to Him, here expressed more completely than in any other single monument of its piety and its art, save perhaps in the greatest of mediæval hymns, the *Dies Irae.* Here, above the door of Chartres, He appears indeed to be the stern, inexorable judge who will come in that day,

> "When earth and heaven shall pass away
> As David and the Sibyl testify."

No gentle Virgin, no pleading Mary is here acting the part of intercessor. She was not at this time (1150) worshiped with a tithe of the zeal of the succeeding centuries when the subject of her Intercession for Mankind, and of her Coronation in Heaven, came to be of equal importance with the Nativity and the Crucifixion. With the growing intensity of regard for her came also a new attitude toward the nature of Christ, namely, regard for his gentleness as well as his justice. This change is expressed in that incomparable sentiment and line, put by Dante into the mouth of the Angel-Keeper of the gate of Purgatory—from Peter, who had the keys from Christ, did this keeper receive them with the admonition—"to err rather in opening than in keeping shut."

This change of attitude is expressed no less in sculpture. It must never be forgotten that the arts are all, though in various degrees, the expression of the thinking of an age as it passes—an open book of records written in a universal language, the letters or lines of which are ineradicable, and not easily or often changed. The bas-relief of the tympanum of the left-hand door of the Cathedral of Paris is one of the noblest and most exquisite of all mediæval expressions concerning the Virgin, her Entombment, and her Coronation.

The Entombment (Fig. 143) occupies the center of the great pointed space so that the standing figure of Christ and the recumbent figure of the Virgin are placed in the naturally proper, as well as most conspicuous, positions. Rhythm, symmetry, precision, order—underlying elemental qualities of fine design—are all here in the highest degree. So too is another essential quality of such design, diversity. A third is also here, that of natural appearance. All these, the elements of vital composition, are the conveyancers of mood and emotion as well as information. The beauty of nature, and the meaning of death, to an age for which the hereafter was as real as the present, are set forth on this bas-relief. While angels lower the Virgin into her coffin, Christ, with the gesture of assurance, and the apostles, in a certainty of a faith that has cast out fear, stand by, the very personification of trustful resignation. Every fold of drapery falls into its appointed place, the mirrored image of nature subjected to a highly reasoned, deeply emotional selection, which is the soul of art. Since the classic age in Greece no such work had been done, yet in no sense is it a copy of classical work, which was as unknown to the mediæval French sculptor as American work of the present time.[20]

All that has been said of this Entombment is equally true of the Coronation just above it, in point of cause and result, of logical sequence of events—as certain to the thirteenth century mind as the succession of day on night. There is more of grandeur, and not less of grace, in these larger figures, and a certain remoteness and rarefaction in the atmosphere which envelops them, akin to that which even the greatest of all mediæval artists acknowledged to be beyond the power of art when, at the close of the *Paradise,* he exclaims:

"O, how inadequate is speech and how feeble toward my conception."

Looking at this coronation one can easily fancy the sculptor on its completion using Dante's very words, changing only "speech" to stone.

Attending angels right and left, are so placed that their feet and wings fill and repeat the shape of the spaces which they occupy, while a third angel, setting the crown of Heaven on the Virgin's head, occupies the point of the arch.

In the lowest tier of this tympanum are the kings

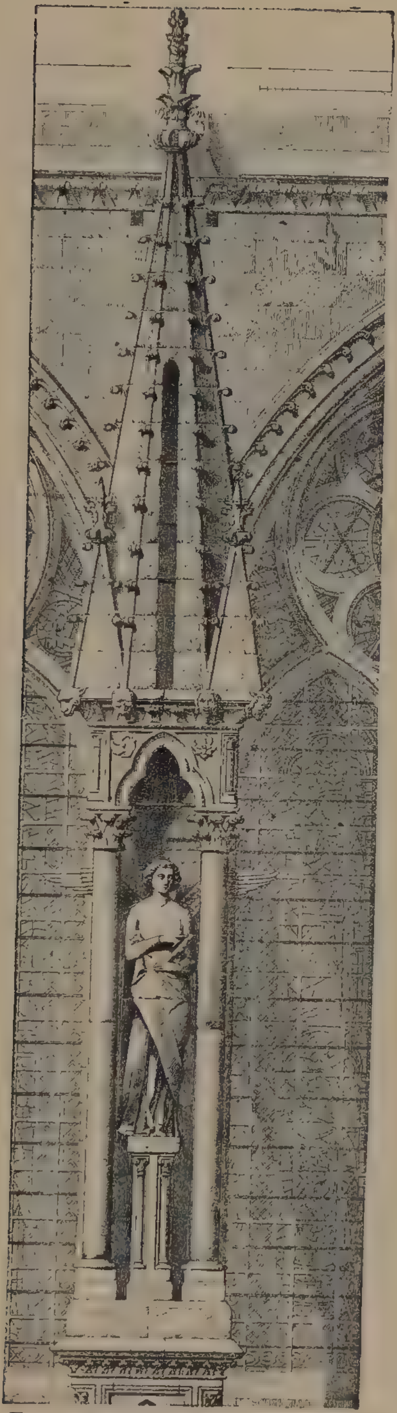


Fig. 144.

Reims. Sculpture of Buttress

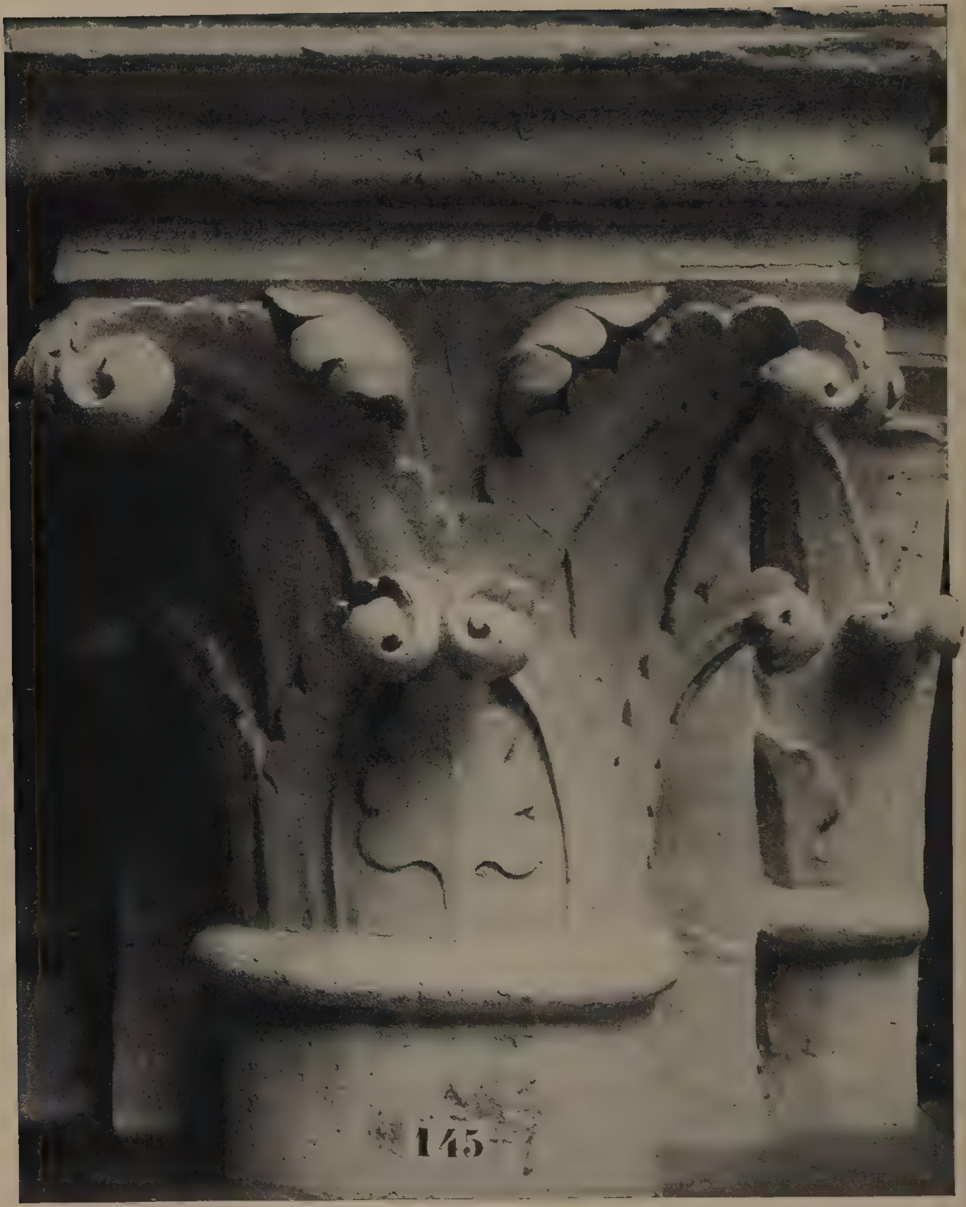


Fig. 145. Capital from Laon

of Judah and prophets of Israel with hooded and crowned heads—sovereign among things temporal and things eternal—who made way for him who finally came, crying, "Prepare ye the way of the Lord." They are seated upon either side of the Ark of the Covenant and on their laps are the scrolls rolled out.

Throughout the entire design of this tympanum, as throughout all the best thirteenth century French Gothic sculpture, there are repeated touches that recall the work of Pericles and his age, with something, now and then, of the archaic time. The hair, for example, of the seated figure on the right side in the Entombment section is exactly like that on the head of the Jupiter from Olympia. The same is true of the hair of the angel from Reims (Fig. 144). On the other hand, for cutting, sharp and clearly defined as that of the Virgin's shroud, cast in folds at once artistic and natural, we need look only in Greek work of the fifth century B. C.—such as the Parthenon frieze (Fig. 25). So also of the zigzag fall of the hood-cloths on the heads of the prophets, or loveliest of all for restrained and powerful realism, every line so slightly curved yet nowhere angular, the Virgin's clinging robe, or that more ample one which Christ wears in the Coronation section. Finally, what more exquisite geometrical ornament is to be found in any art than the jewel-like pattern of circles as symbols of eternity, separated by crosses and crosiers, on the Virgin's coffin. It is perfectly true, what Ruskin said of the men who did these things—"They have left us their adoration." It is what all really great artists always do and always must.

But it would be wrong to suppose that the greatness of Gothic sculpture contented itself with endowing only the important architectural parts, and important subjects, with such mastery. Far otherwise, for it was above all characteristic of the age to be thorough, giving equal heed to the carving of a saint's figure or the capital of a column. With these men it was as with the Greeks, who paid as much for the fluting of columns as the carving of the capitals.

In the endless foliage motives with which string courses, archivolts and capitals were carved, the dominant note is nature; not, however, that any attempt was made to copy exactly the leaves of the forest or the meadow. Wherever the chisel of the early thirteenth century found its way, it left work distinguished by two invariable characteristics. First, foliage of whatever sort is so set upon the member, which it is to decorate, capital or molding, that it leaves the useful and appropriate shape of that member conspicuous. If anything, it compels attention to the working form of the capital (Fig. 145), or other part, as the case may be. It never conceals that form.

And second, the foliage often so attentively studied as to be botanically accurate as to species, geranium, or oak, or vine, shows far more the vital beauty of flexure, angularity, or curve—typical of all geranium, all oak, all vine—than the actual beauty of any individual specimen. Woods and fields and the bank of every water course furnished the Gothic sculptor of this time with models and inspiration. His reason kept him from fatal effort to equal nature. Because of his understanding of art he managed to provide those things which nature had not furnished him, and because of his understanding of nature he made those things fit for their places and intrinsically beautiful. No two capitals in an entire church were made in all respects alike, except that of having forms admirably suited to the performance of foreordained structural functions, and yet the carved foliage of these capitals may be as easily distinguished as that of well-known plants. The point is that certain inherent qualities of those plants, such as curvature, can be translated into stone, and other qualities just as inherent, such as slenderness, can not. The Gothic sculptor recognized these limitations, and kept his efforts well within bounds. This is artistic restraint, signal and rarest attribute of art. Then comes invention, that other rare and signal attribute by means of which the artist, having got material and inspiration from nature, from grass and flower, is able to put endless variety into his work. He is dependent upon nature and must imitate her, but in another sense he must make himself independent of nature and must not try to copy her. She gladly shows him the way to the highest peaks but he must do his own climbing. This relation of art to nature—its dependence and independence—was never more clearly and beautifully established than in the foliate capitals of the aisles of the cathedral of Paris (Fig. 146), especially those of the choir, apse and triforium. Further, this relation of art to nature, its dependence and independence, was never more plainly and beautifully set forth in words, in spite of their figurativeness, than by William Blake when he said: "Israel delivered from Egypt is Art delivered from Nature and Imitation."

Finally, there is among the works of thirteenth century Gothic sculpture, as among all other sculpture, a class of objects which exist for themselves; that are in no way connected with architectural schemes, great or small—bas-reliefs, groups and single figures in the full round, ecclesiastical furniture, the backs of altars, crucifixes and private devotional images of saints. Naturally these things share the main characteristics of the more important works such as have been considered. Among them, their range is enormous and their number great, there is no finer single exam-

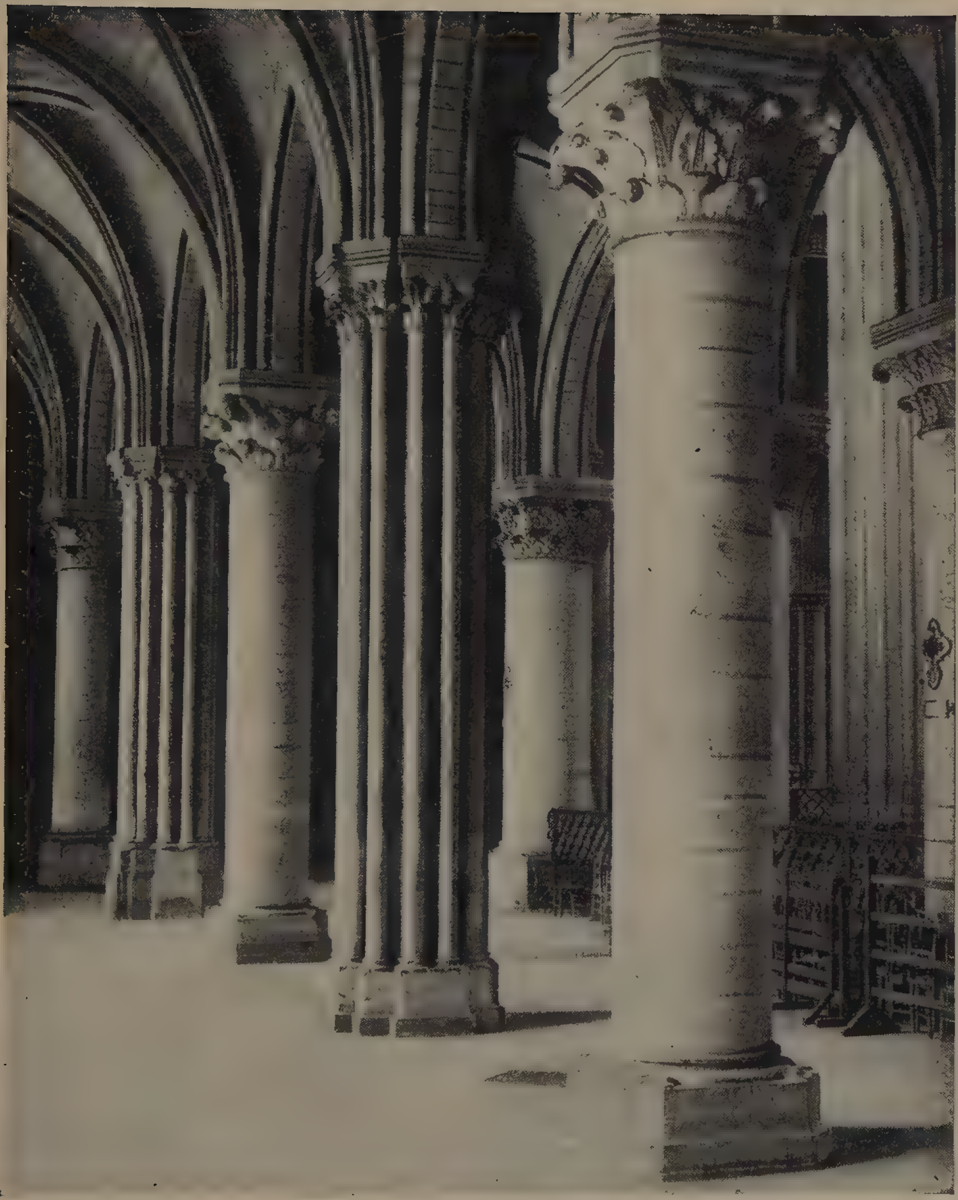
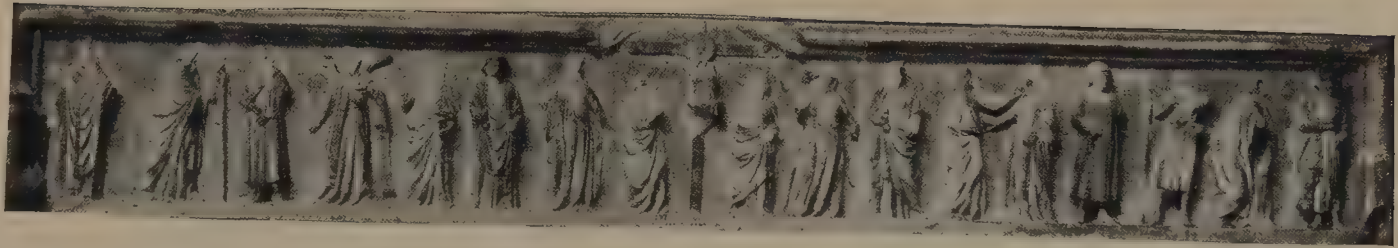
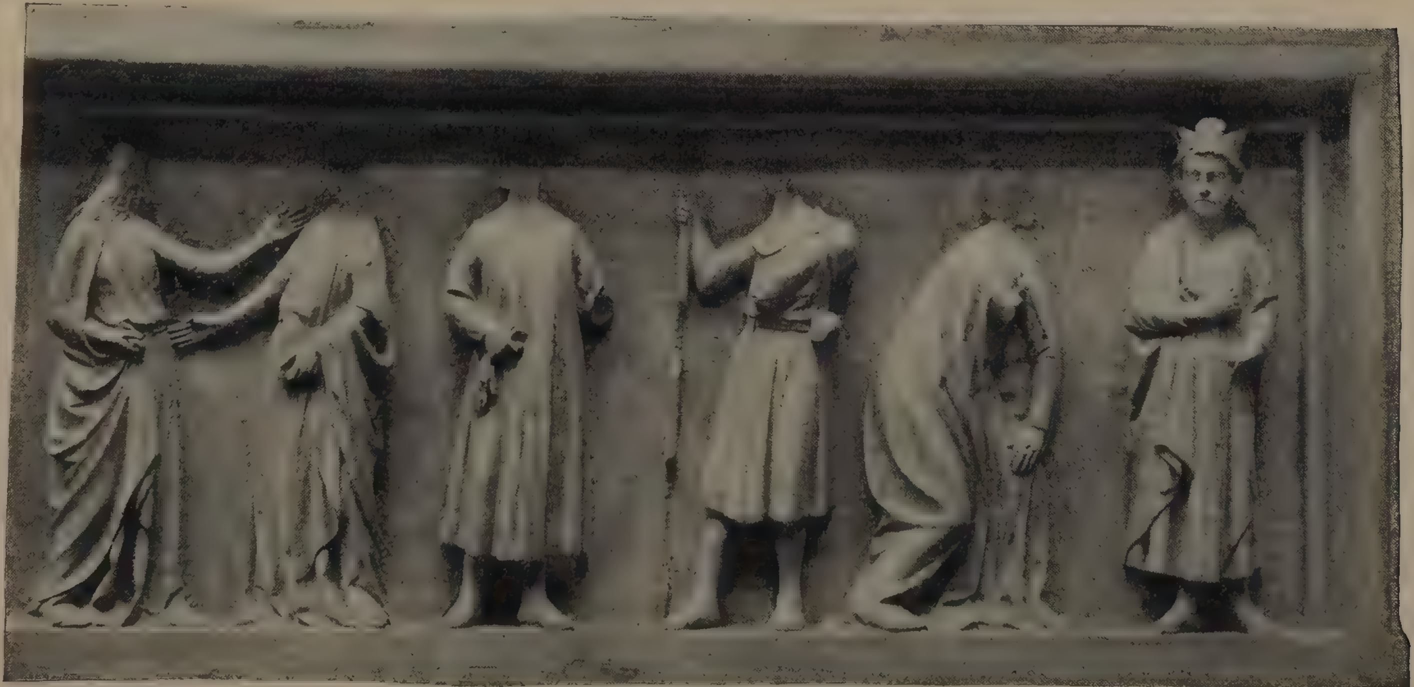


Fig. 146. Paris. Ambulatory





ple than the retable (front of the shelf of an altar used for crucifix and candlesticks) in the church of Saint Gemer de Fly (Fig. 147), dating from 1224. It is a long narrow bas-relief of stone. The subject is the crucifixion, and there are eighteen figures. Except for the fact that no two overlap, probably because of the artist's conscious determination to make the meaning of his work clear, this thing is the equal of the finest Greek bas-relief, not excepting the frieze of the Parthenon save for its infinitely greater size and complexity of treatment. Every good physical quality of sculpture is here represented, and the emotional impact of this particular subject, the Crucifixion, is almost overpowering in its solemnity and sense of waiting calm. Further, these qualities were all enhanced in a high degree by the realistic coloring of faces, flesh and draperies, and a fine diamond pattern in crimson and blue and white and gold chased upon the background (Fig. 148). The retable of St. Gemer de Fly proves how a small thing of art may be grand, and a painful thing lovely, and as much as any fine work of thirteenth century Gothic art, but not more, it proves that nature was the artist's continual associate, imagination and reason his advisers, and faith his "dominant lady, spirit-wed," as the age of St. Louis would have expressed it.

Contemporary with the changes in Gothic construction, which brought about the so-called flamboyant style, there were changes in sculpture which, while they were the cause of much that was lovely as well as highly realistic, ended by debasing sculpture to a mere matter of copying. The famous Vintage capital in the cathedral of Reims (Fig. 149), carved about 1250, is a good illustration of this tendency to place emphasis upon the utmost possible amount of realism. The work is extremely delicate and lovely. Technically the leaves are marvels. They are nearer to actual fossil leaves than to anything else. But what bearing have they upon the capital, the working functional member in a great piece of construction? Only that of concealing the shape of the member within, as it were, a beautiful bouquet bound about the top of a shaft. This decoration is natural, and it is vastly ornamental, and it displays wonderful workmanship but it is not conceived as a part of that which it decorates. It is in no sense organic, fitted to its position and no other, as is the foliate decoration on the capitals of the piers of Paris (Fig. 146), or those of Le Mans (Fig. 103), or on the capital from Laon (Fig. 145). There are, however, many English capitals which in point of foliate design closely approach thirteenth century French capitals (Fig. 152). These latter are works of a truly creative and wholly logical art, while the capital from Reims is a highly remarkable instance of imitative art. So also

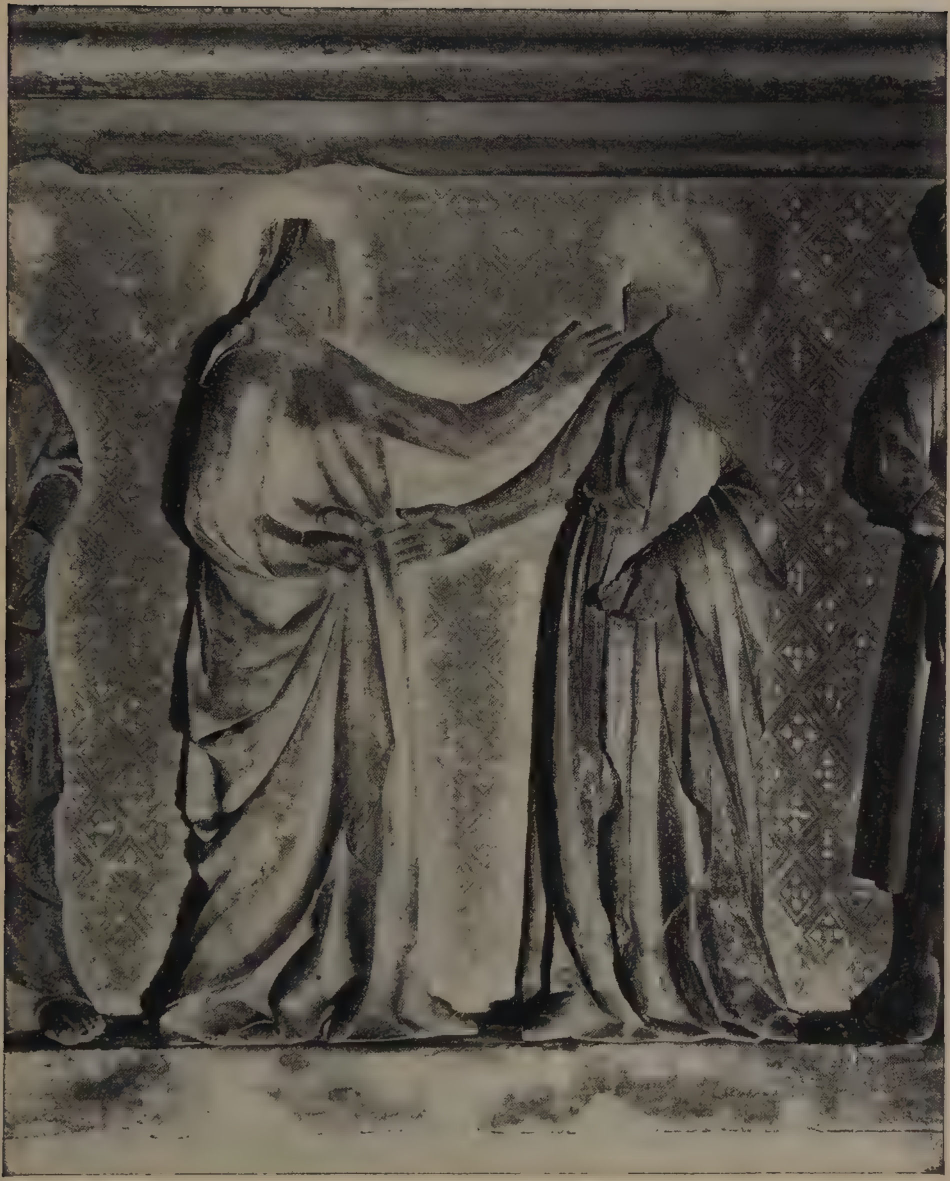
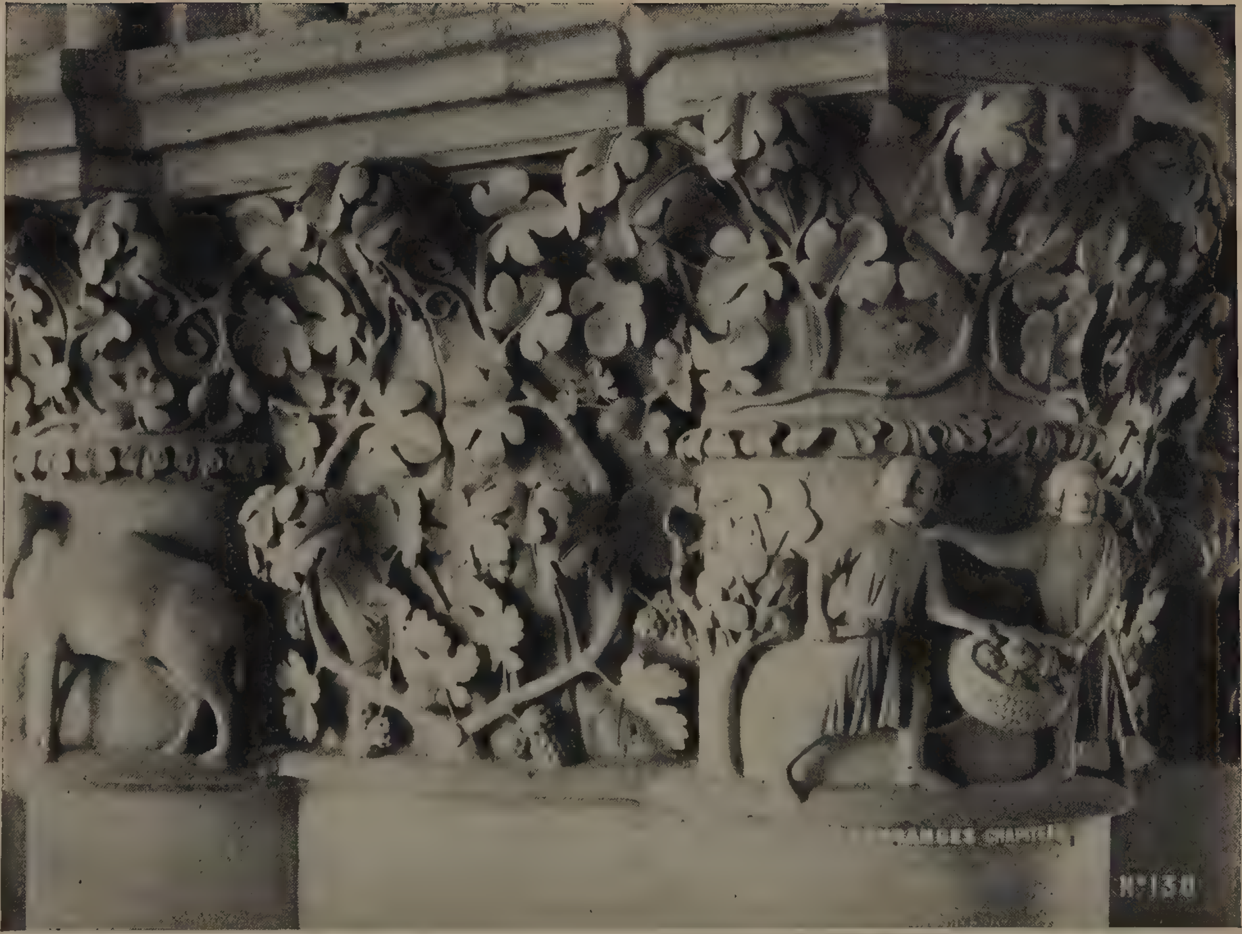


FIG. 148. DETAIL FROM RETABLE, ST. GEMER DE FLY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is this remarkable tub capital (Fig. 150), out of which a vine of ribs bearing leaves rises to support the vault; an awkward and absurd object, yet undeniably pretty.

English architecture of the "Decorated" and "Perpendicular" period shows this same tendency in sculptured foliate ornament—work of the most elaborate, often realistic character, but not organic in the sense that similar earlier sculpture was organic. No better illustration is to be seen than a capital from Southwell Abbey (Fig. 151).

Among the many surpassingly fine sculptural features of Reims—as a whole the most harmonious and consistent of the great French cathedrals—none is more striking, or magnificently decorative, than the angels of the buttresses (Figs. 133 and 144). These great figures with outspread wings are as graceful and free in their movements and pose as nature itself. They are in no way called on to make any sacrifice of naturalness for the sake of architectural propriety, such as is called for, and present, in the figures on the jambs of the doors of Chartres or Paris. And yet these angels serve a practical end in the structure of the buttresses by adding to the actual weight and massiveness of the vertical outer piers just as the great pinnacles, canopy roofs above the angels, do. These pinnacles, really small spires, are raised on slender shafts, and are in design identical with the pavilions about the base of the spire of Senlis. Set a little back, so that their wings may spread out on either side, and behind the shafts, the statues are raised on pedestals. The flying arches of the buttresses, coming from the nave wall, thrust against and are secured by the great outer piers, of which the pinnacled canopies and their angel inhabitants are the actual summits, structurally useful weights and lovely ornaments. The effect of this colossal edifice, circled at a great height by such obvious and conspicuous members of structural significance possessed of peculiar appropriateness of meaning, heavenly ministrants to the earthly church, clothed in artistic forms of natural loveliness—this effect is startlingly splendid. It is such an effect as can alone be produced by the perfect union of the highest order of reason with the most refined sense of beauty.

The finest accumulation of sculptured human figures in England, and one of the most impressive anywhere, is that of the west front of the cathedral of Wells (Fig. 124). These figures number upward of three hundred, of which one hundred and fifty-two are life size, or larger. This sculpture dates from the mid-thirteenth century and is therefore contemporaneous with the best of similar French work.

The front of Wells (Fig. 124), as a structural whole, as a great unit of architectural design into which, for ornament, as well as the conveyance of

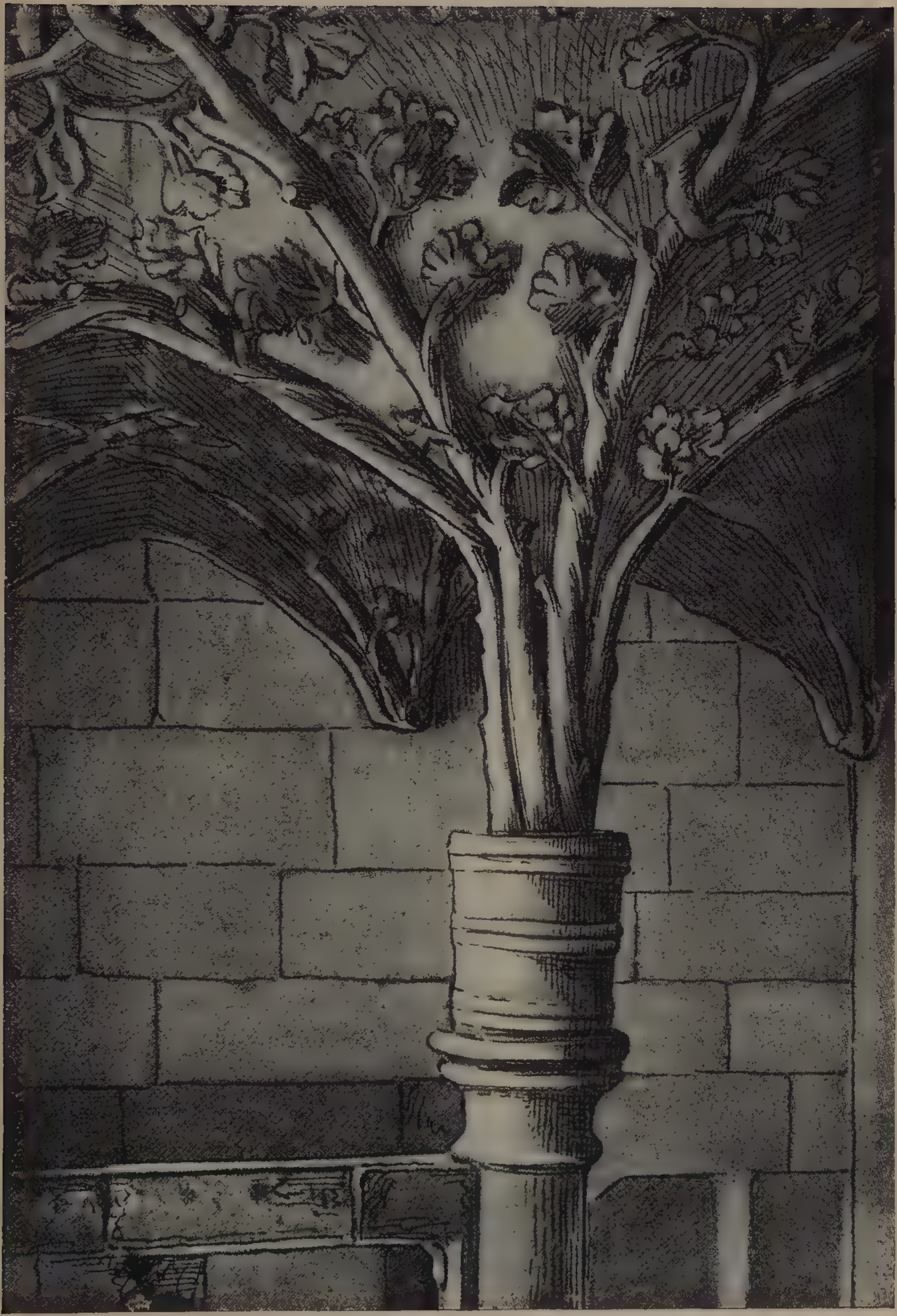


Fig. 150. Late Gothic Sculptured Vault

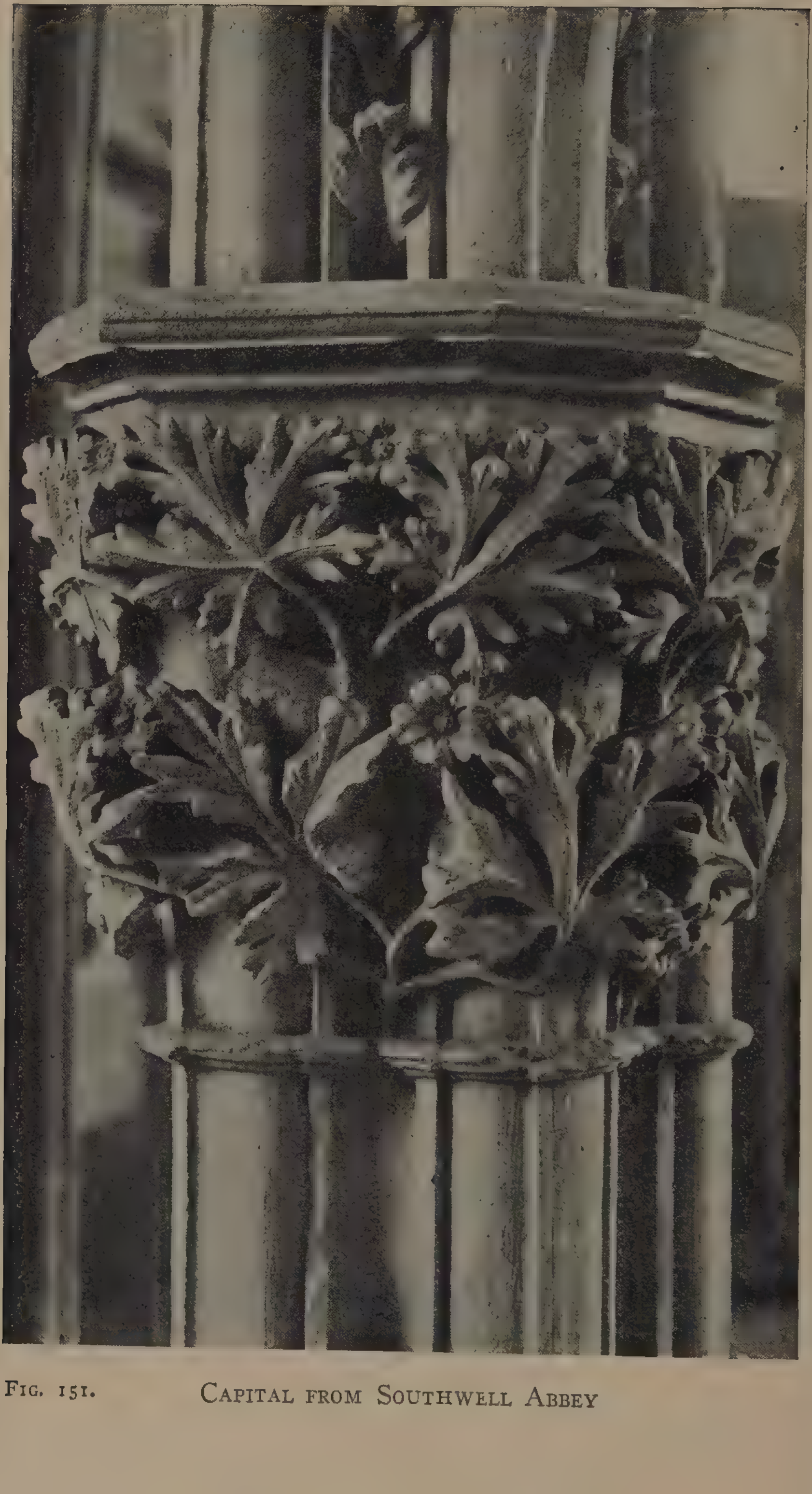


Fig. 151. Capital from Southwell Abbey

meaning, historical and theological, many statues are incorporated, is distinctly inferior to the façade of Paris, and others of its size and time in France.

And further, the sculptures themselves, beside those of Paris, or Amiens, are curiously rude and archaic. They are inferior to the figures of the west front of Chartres in point of technique as well as architectural fitness, though a century later. The front of Wells seems made for the sculpture. The sculpture seems made for the fronts of Chartres and Paris. Yet few works of architecture are more impressive than the west front of Wells, or few statues, in themselves, more interesting. For beauty of conception, however, and beauty of manipulation, as well as architectural appropriateness, the sculpture of Paris or Amiens is beyond comparison finer.

As a thoroughly mediæval expression, as a setting forth in readable form of those things which the church stood for, together with the story of its standing, exemplified in human and divine creatures, nothing exceeds the front of Wells. It presents to the senses in stone, "the glorious company of the apostles, the goodly fellowship of the prophets, the noble army of martyrs—the heavens and all the powers therein." Kings, prelates, saints and warriors, founders and donors, with stories from the Old and New Testaments are here. And more is here. In the topmost tier of the façade, below the gable where Christ is seated in final majesty, are more than ninety groups, or single figures, showing the resurrection of the dead (Fig. 153). It is one of the strangest, most extensive, and in some respects most touching of the many mediæval presentations of that literally and universally believed in event. Some are risen. Others are rising—the lids of their tombs being shown at every conceivable angle. A tremendous sense of reality pervades it all, and a no less tremendous sense of general confusion. This front of Wells covers, in its meaning, things past, present, and to come. This actual church of sculptured stone is the adequate emblem of the "holy church throughout the world" about which St. Ambrose wrote the great hymn, and on which the Middle Ages centered their intense childlike faith.

Of painting, i. e., of picture making in the modern sense, the Middle Ages knew little. In Italy it is true, Byzantine Greek artists painted many altar pieces, but as pictures these things are strangely primitive and unnatural although they often have a certain inexpressible awe and dignity about them. The figures are stiff and very formal, and they contain nothing that can be said even to tend toward naturalistic representation. Of perspective, foreshortening, and light

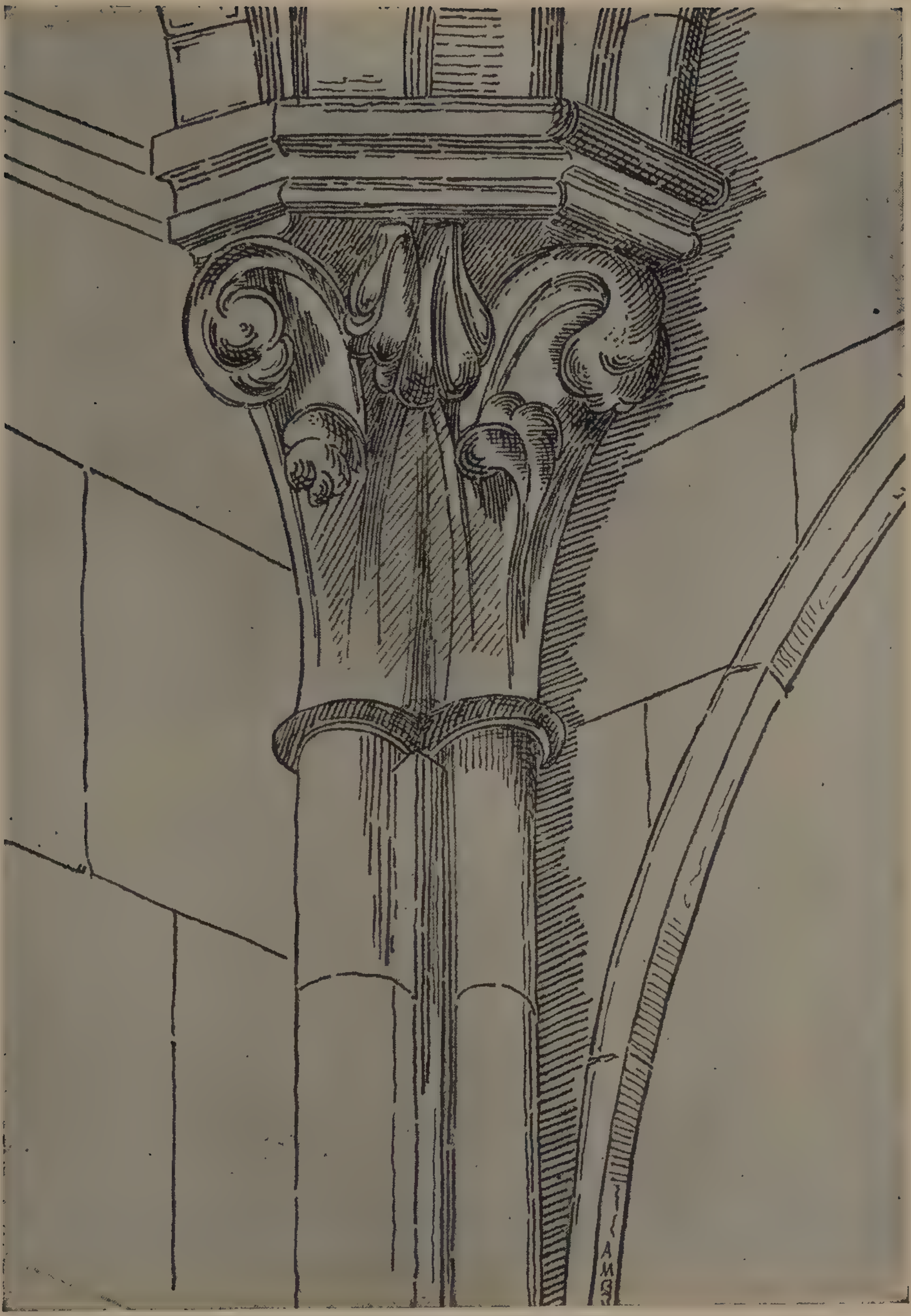


Fig. 152. Wells. Capital in Porch

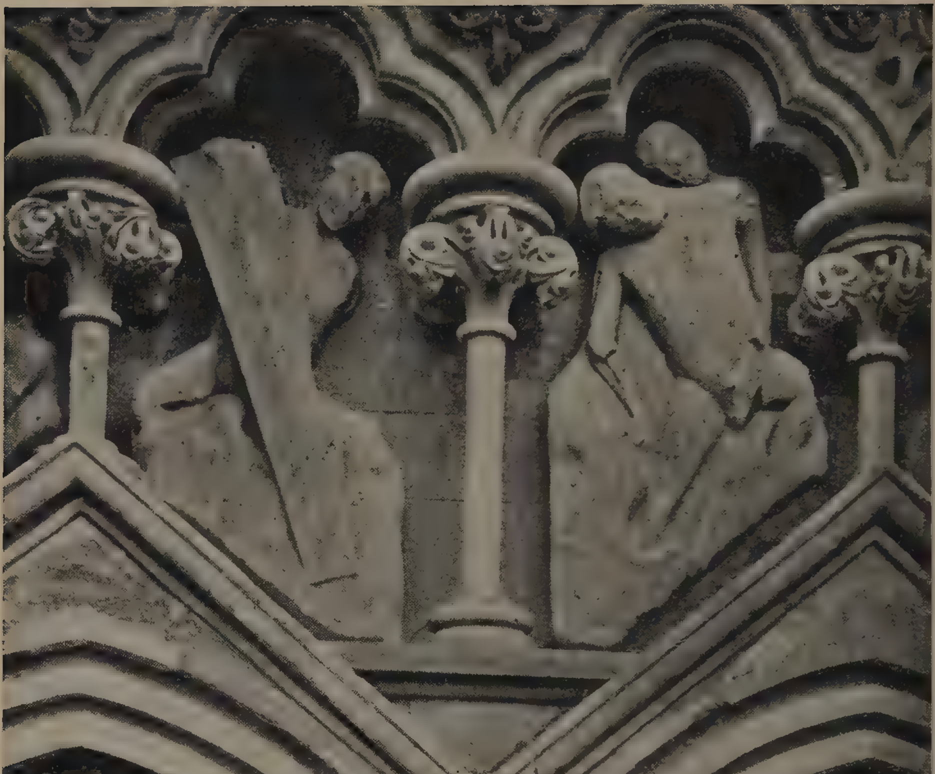


Fig. 153. Wells. Façade, Sculpture

and shade, there is almost no knowledge displayed. Of brilliant color, with an extensive use of gold on backgrounds, there is much.

North of the Alps, especially in France, much illuminating, i. e., painting of manuscripts, was done. In these things many Byzantine traits are distinguishable although the general state of pictorial art is less advanced than in the Byzantine altar paintings of Italy. These illuminations are decorative rather than representative, although subjects telling the story of the text, illuminating the text in the sense of making it more understandable as well as pretty, are of frequent occurrence. On the other hand, more untrammeled freedom of invention expressed in pure line, and lovelier harmonies of color, are not to be found in the work of any age than in the illuminated books[21] of the second half of the thirteenth century in France.

The question naturally arises as to how it happened that sculpture north of the Alps should have made such long advances into the realms of naturalistic representation while painting remained so backward. The answer is that architecture made large use of sculpture, but for painting it provided little or no place because, in its advance, it steadily did away more and more with walls which furnish the natural inducement for painting. That Gothic sculpture of this period was often colored meant little in connection with the art of painting.

In Italy meanwhile, the old Roman and Byzantine art of mosaic had a strong hold upon the minds of men when they turned to the decoration of church walls. This art gave place gradually to that of painting in the modern sense, which in Italy came about as the result of a general awakening of interest in the visual aspects of nature, during the middle of the thirteenth century—an awakening analogous to that in France which resulted in the beauty and naturalness of Gothic sculpture. In Italy, however, architecture implied walls, nothing like the true Gothic development ever really getting a hold in the peninsula. Before the thirteenth century revival of painting in Italy, marble veneering, outside as well as in, was general for wall decorations. It shared popularity with mosaic. St. Mark's in Venice is the most notable example, being one vast mass of marble veneer and mosaic. Meanwhile the twelfth and thirteenth century architecture of Lombardy was in the main lacking in the beauty of color—mosaic, or marble. These same centuries witnessed the development of a wonderful art known as Cosmati, from the name of a family whose members were the chief practitioners of it. Cosmati work was the inlaying of very complex and exquisitely refined

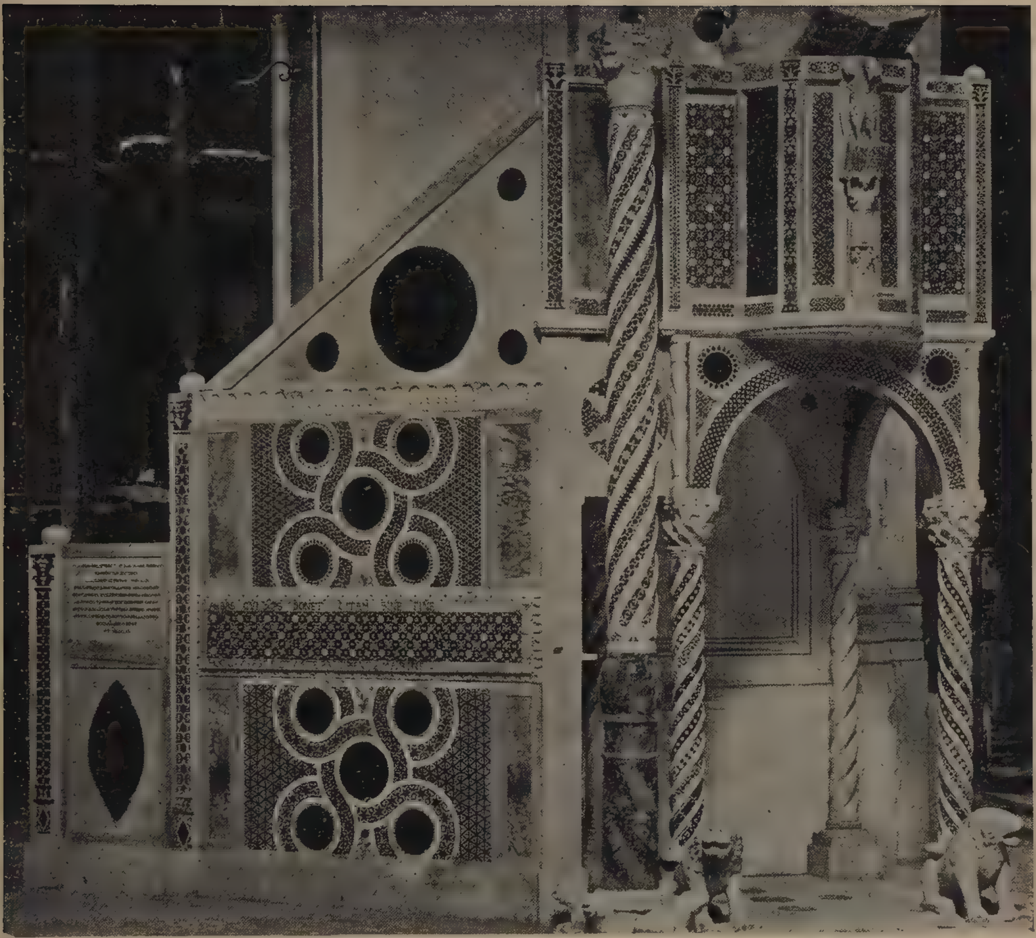


FIG. 154. PULPIT. SALERNO

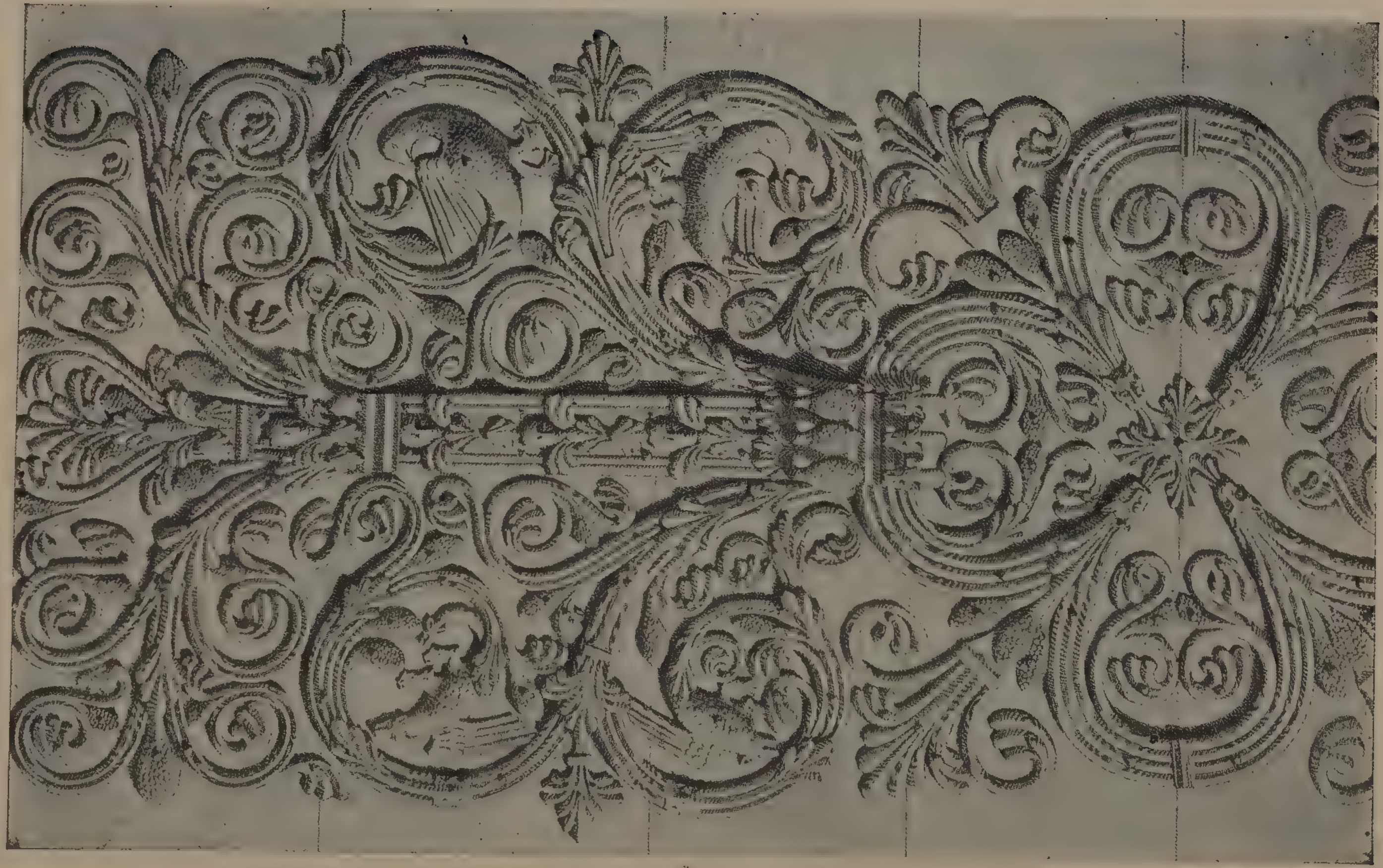


Fig. 155. Iron Hinge from Door of Paris

geometrical patterns in small pieces of parti-colored stones and marbles. The pulpit of the cathedral of Salerno (Fig. 154) is a beautiful example.

It was not, however, as painting, in the generally accepted sense of the term, that color came to its own during the Middle Ages, but as stained glass, by the development of which a wholly new and wonderful art was brought into existence—an art of the highest decorative character, based on a sort of design that rarely, at the best, exceeded what is in the main heraldic, worked out in a medium of translucent brilliancy. The practise of this art was begun in the Romanesque period and reached perfection in the Gothic.

In this art, as with all other forms of Gothic execution, the element of common sense was mingled with a passionate zeal for conveying information, and a passionate love of beauty. In no other field of Gothic productiveness did the artist regard more absolutely the limitations set upon him by the nature of the material with which he was working. The worker in stained glass had a three-fold object; first, to temper the light which would have been an unbearable glare in buildings that were almost all windows, had those windows been clear white glass; second, to make such screens, or fillings, for the windows as would allow enough light to enter and at the same time give a sense of protection from the outside world—the sense of being enclosed; third, to make the glass tell a story, declare an article of faith, or point a moral, in designs of striking pictorial interest and harmoniously rich color.

Some way had to be devised for holding together the separate pieces of glass. This was done by means of lead bands. At once the designer seized upon these lead bands, opaque lines crossing the glazed surface of the window in various directions, and used them for the outlines of his design, figures, or whatever else it might consist of. This is but another instance of the many in which these artists turned the things of necessity into elements and sources of beauty.

Of the three fundamental principles on which painting, as usually conceived of, rests—outline, color and chiaroscuro or the science of light and shade—stained glass design commanded but two, namely outline and color. In painting, chiaroscuro (by means of which objects are made to look round and solid upon flat surfaces, a wall or a canvas) implies an opaque surface, and one that shall be lighted entirely from in front. The transparent and translucent nature of glass permits light to pass through and in its essence therefore is incompatible with the rendering of chiaroscuro. The stained glass artists of the twelfth and thirteenth centuries never tried to overstep the inherent bounds set by glass as a medium of artistic expression, and never tried to force chiaroscuro upon a medium opposed to it by nature. For the sum of his effect, the window designer relied in the main on the lead settings of the glass to give pattern (Fig. 156), and on the juxtaposition of sheets, large and small—a patchwork of pieces of variously colored glass translucent and transparent—to produce harmonious brilliancy, and a remote suggestion of the natural appearance of things, blue of skies, purple and crimson of robes, pink of flesh. When he wanted detail, such as features in a face, or lines to indicate the folds of a drapery, he had recourse to his brush and an opaque pigment which was often burnt into the glass by means of a baking process. The result was a highly conventional art, hedged about by exacting restraints—an art of color, but not like the art of painting, in that it dealt with little more than the merest ghost of realism. The cathedral of Chartres yet boasts many windows of the twelfth and thirteenth centuries unharmed by accident or change. Here one may see "that unrivaled treasure of stained glass" as Pater called it, by the agency of which, he continues, speaking of the interior effect, "the placid sunshine of La Beauce seems to have been transformd in a moment into angry imperious fire."

Among the other splendid examples of extant thirteenth century glass none is more jewel-like, for none is composed of more nearly transparent material, undarkened by opaque lines other than those of

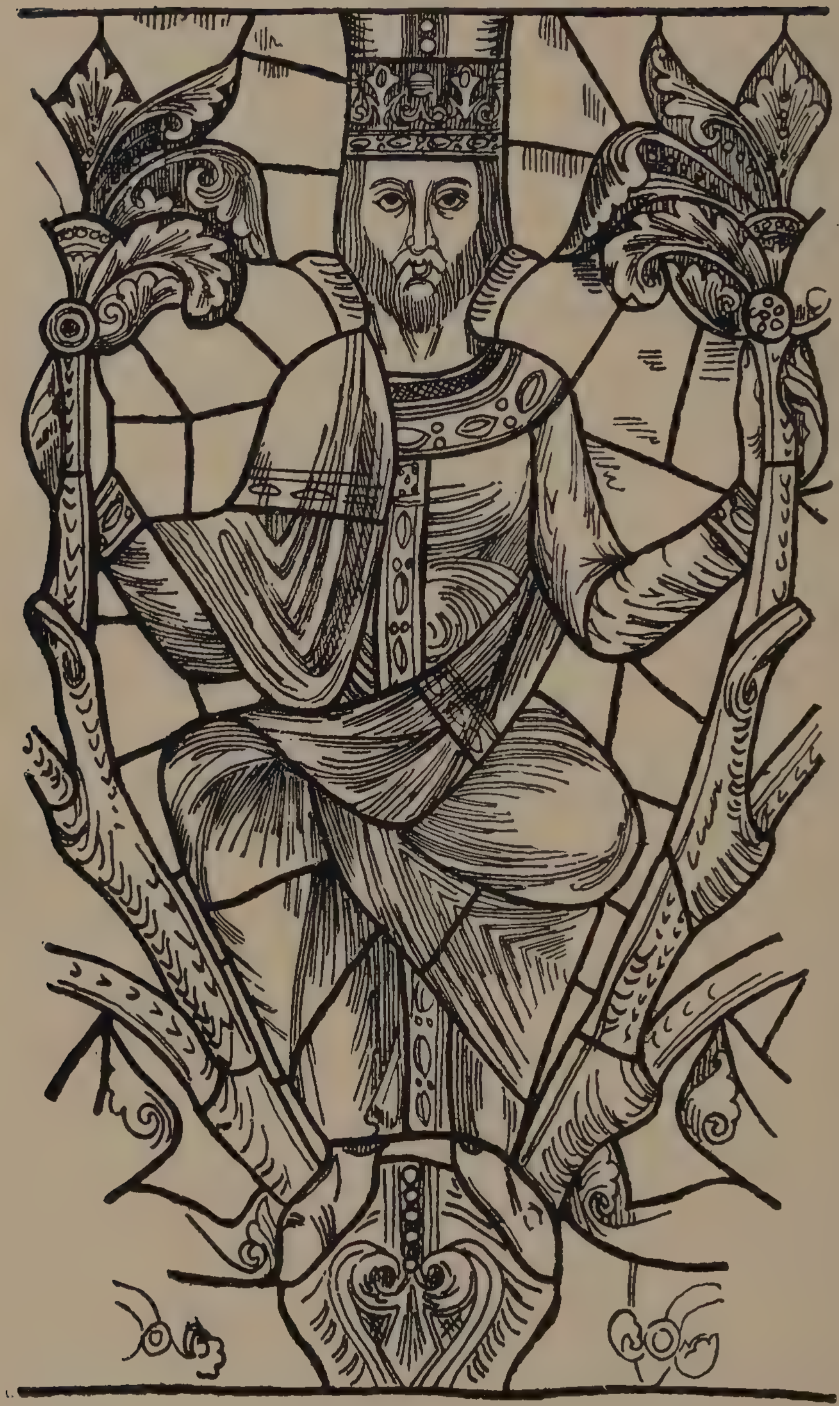


Fig. 156. Chartres. Stained Glass

the tracery and the lead settings, than the three rose windows of Paris;—that of the nave, and those of the transepts. They are beyond words brilliant and harmonious, founded on color schemes similar to those of the loveliest Indian or Persian weaves.

Much fine stained glass was made in England and Germany, and some in Italy and Spain, during the thirteenth century, but nothing new was invented, while the best glass was either imported from France, or more or less directly copied from French examples.

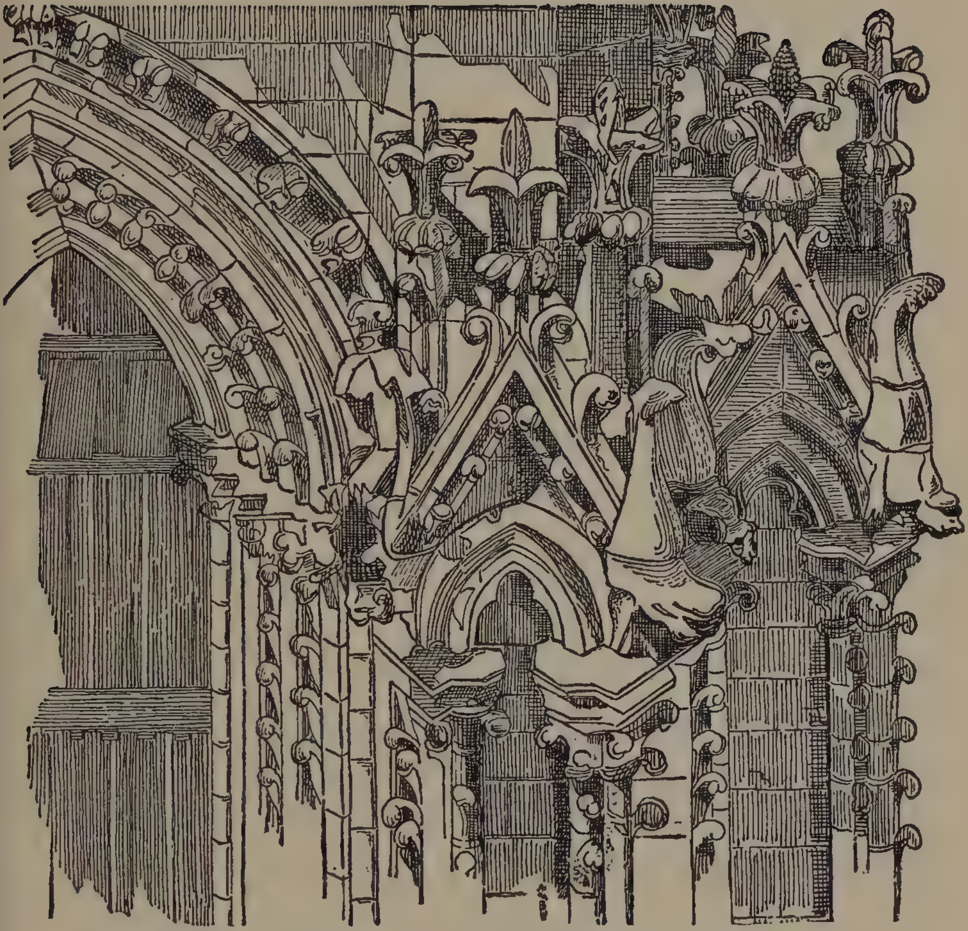
As with architecture, sculpture and stained glass, the twelfth century prepared the way and the thirteenth set the seal of perfection, so it was with the work of the metal smiths, in precious and in common metals. Jewelers' work in gold, enamel and costly stones, the intrinsic value of which, however great, was incalculably increased by the artist's thought and labor expressed in the design—clasps of a bishop's cope, coffers for relics, chalices for the eucharist—all were given designs of fitness and beauty. The same is true of iron, of objects such as the hinges and champs of doors, the grill or gates for a chancel, or the fence about a tomb. These objects, and scores of others, furnished the daily occupation of many a master of the so-called and much practised minor arts of the Gothic period. A single remarkable instance will suffice for illustration, the iron work of one of the doors (Fig. 155) of the west front of Paris.

In this lovely bit of art craftsmanship, reason and beauty are identical—are as inseparable as in the works of nature. The valves of the door are composed of heavy planks. The first requirement then was a means for binding the planks together. The second requirement was a set of hinges strong enough to swing the valves. So far the call was that of reason. But at this point another demand was made, namely that of beauty, the demand that these reasonable doors, composed of planks held together by iron clamps, and swung on iron hinges, should be lovely—fit for their conspicuous station in the front of such a building, and fine enough to occupy the entrance way to such an interior as that of Notre Dame.

That the metal of these hinges and clamps should stretch in all directions over the planks so that they might be frequently bolted to the wood and so hold it tight is a matter of obvious common sense. But it was a matter of art, a matter of very unusual design, the idea of making the iron of clamps and hinges an intricate mesh of scrolls and leaves, fruits and flowers, heads, human and animal, birds and beasts—almost every living thing. Within well covered, but nowhere crowded spaces, arranged about clearly defined major and minor axes, patterned over with an unceasing variety of curves which, with all their natural changefulness are subjected to strict laws of artistic balance, part and part on one side and the other—within this altogether orderly mesh of iron strips there are hundreds of little quavers and quirks suggestive of the unceasing variety of nature which is the price nature pays for her eternal interest and charm. Every bolthead is placed with the care of a precious stone within its setting. Every nut, and flange to keep it from pulling through, every spike-head, is an element of interest and a touch of beauty. If ever the doctrine, "art is based on nature and must in a sense be true to her," has been attested, it is so in the iron work of these doors. If ever man's work bore the signs of loving and delighted labor, yielding ready obedience to the dictates of unflinching reason, it is the cunningly wrought iron of this portal. And be it remembered this is but one single infinitesimal bit of that world which mediæval art created, a world of works of faith and reason breathing beauty, works which were often, like the works of nature, deformed because of faulty material, or unfortunate environment—as a crippled child or a dwarfed tree; works, on the other hand, that, within the bounds of human and finite accomplishment, again and again measure well up to those of nature, the limits of which are infinite; works, finally, which force an understanding of that often repeated, extraordinary comment of the greatest of all the mediævals,—Dante's—"Nature is the child of God, and art is the child of nature, therefore grandchild of God."

In the great and little undertakings alike of Gothic art, preeminently architecture, the dominant note was reasonableness. Works of art were meant to be works of utility, and were undertaken as a rule in the spirit of common sense. The ultimate aim was the expression of thought—the subject might be itself small, or colossal, a church door, or the mightiest of church towers—the expression of thought finely, which means accurately and beautifully; reasonably and imaginatively, in whatsoever effort the mind turned to, and at whatsoever labor the hand wrought. As mediæval religion recognized seven transcendent virtues, so also did mediæval art. To the essential importance of these seven virtues, every good piece of mediæval art offers testimony. To the presence of these seven dispositions in varying degrees in every good mediæval workman, their works bear witness. These seven dispositions, seven virtues, were Reason, Patience, Diligence, Beauty, Conviction, Aspiration, Imagination.

THE END



Carved Ornament at the Top of the Towers of Paris

NOTES

[1] In the ten years since this was written a great change has taken place, the college or university which continues to ignore art now being the exception.

[2] The following quotation contains a capital discussion of this matter.

"Nature, therefore, in the sense of the universe of created things, is a manifestation of God's skill in the mutual adaptation of parts, and their adjustment to the scheme of the whole. It was according to the same conception that the Greeks spoke of the universe as *cosmos,* from a verb signifying to order or arrange. Art is man's endeavor at the same thing, an attempt on his part to exemplify one or more principles of the cosmical beauty. If he does this in marble or bronze, we call it sculpture or statuary; if with pigments, painting; if with notes of the scale, music; if with words rhythmically arranged, poetry." The same holds true of architecture in that it implies the ordering or arranging of building materials, bricks, stone, marble.

"Aristotle's view is: 'Since there is no art which is not a habit of methodical production, nor any habit of methodical production which is not an art, it follows that the definition of art is: A habit of production in conscious accordance with a correct method.' No definition of art is older than Aristotle's, so far as I am aware; and none is more recent than this which I extract from the latest authoritative English dictionary: 'The skilful and systematic arrangement or adaptation of means for the attainment of some desired end.'" Albert S. Cook.—*The Artistic Ordering of Life,* New Haven, 1915.

Curiously interesting in this connection are the opening sentences of Tagore's, *The Poets' Religion,* in his *Creative Unity.*

"Civility is beauty of behavior. It requires for its perfection patience, self-control and an environment of leisure. For genuine courtesy is a creation, like pictures, like music."

[3] The following quotations bear upon this question directly and from widely divergent angles.

"Men say that a thing is beautiful when its parts correspond as they ought, because pleasure results from their harmony." Dante, *The Convito.*

Compare this passage concerning beauty with one from Galsworthy in his essay, *Vague Thoughts on Art.*

"Beauty! An awkward word—a perpetual begging of the question; too current in use; too ambiguous altogether; now too narrow, now too wide—a word, in fact, too glib to know at all what it means. . . . But this essential quality of Art has also, and more happily, been called Rhythm. And, what is Rhythm if not that mysterious harmony between part and part, and part and whole, which gives what is called life; that exact proportion, the mystery of which is best grasped in observing how life leaves an animate creature when the essential relation of part to whole has been sufficiently disturbed. And I agree that this rhythmic relation of part to part, and part to whole—in short, vitality—is the one quality inseparable from a work of Art. For nothing which does not seem to a man possessed of this rhythmic vitality, can ever steal him out of himself."

Finally, Buyermeyer: "The artist is the creator of a world in which what eludes and baffles us in *the* world is seized and bent to our wills." And again: "There is no emotion that does not as it becomes intense and conscious of its purpose seek to envisage its object in characteristic form, and such envisagement is Art."

The Esthetic Experience.

[4] Technique means the mode or manner of artistic execution; skill in art; the how of doing things rather than what is done. No greater error is possible than the assumption that technique is unimportant, and may be neglected. Tennyson meant just this when he said, ironically, to Gosse: "It's not what's said, but how it's said, though the fools don't know it."

As Tolstoi says, "Every true artist, even now, learns his technique, chiefly, not in the schools, but in life, from the examples of the great masters."

Passion for, and the possession of a good or masterly technique always reacts beneficially upon an artist by making him wish more and more to choose subjects worthy a great technique; worth doing well. There is a notable poem dealing with this subject by Gautier, translated by George Santayana. It begins:

"All things are doubly fair
If patience fashion them
And care
Verse, enamel, marble, gem."

[5] An ancient and beautiful picture of the arts, an account of their classification, and an estimate of their value to civilized society is contained in the following verses.

"So every carpenter and workmaster that laboreth night and day; and they that cut and grave seals, and are diligent to make great variety and give themselves to counterfeit imagery, and watch to finish a work."

"The smith also sitting by the anvil and considering the iron work, the vapor of the fire wasteth his flesh, and he fighteth with the heat of the furnace, and the anvil is ever in his ears and his eyes look still upon the pattern of the thing he maketh, and he setteth his mind to finish his work and watcheth to polish it perfectly."

"So doth the potter sitting at his work, and turning the wheel about with his feet, who is always carefully set at his work, and maketh his work by number."

"He fashioneth the clay with his arm, and boweth down his strength before his feet; he applieth himself to lead it over; and he is diligent to make clean the furnace."

"All these trust to their hands and everyone is wise in his work."

"Without these cannot a city be inhabited; . . ."

"But they will maintain the state of the world and all their desire is in the work of their craft."

Ecclesiasticus xxxviii.

[6] A few examples of Greek arches are extant; in drains, underground passages and gateways. Architecturally considered they are, to all intents and purposes, negligible.

[7] The refinements, so-called, of Greek architecture have given rise to much discussion and led to much argument. There are those who agree with Sir Banister-Fletcher when he says, "Many refinements were practised in the great period of Greek art, in order to correct optical illusions." There are others who maintain that the Greeks,

who based all their art on nature, proceeding as she proceeds, but not attempting to copy her, could not have endured anything so unnatural as a straight line, parallel lines, or regular curves; in other words, that the Greeks demanded incessant changefulness of direction in their architectural lines just as they did in the lines of their incomparable vases, but changefulness of direction rigorously subjected to laws of uncompromising symmetry. Finally, there are those who declare that the refinements are wholly the result of mechanical procedure based upon mathematical calculations. However this may be the extraordinary fact remains that in the Parthenon there are no mathematically straight lines; no mathematically flat surfaces. The same is true of the bulk of Greek architecture of the best period.

The refinements are expressed in lines which are "curves of extreme tension as if substances pulled out lengthwise with force that has found its utmost resistance, lines of strain, long cool curves of vital springing that bear the strength of their intrinsic unity in their rhythms." Only such lines can attract and hold the attention of profoundly artistic persons, and they are the possible creations of none but the most artistic of men. These are the lines which constitute the main cause for the truthfulness of Emerson's verse:

> "Earth proudly wears the Parthenon
> As the best gem upon her zone."

For a full and carefully reasoned discussion of this whole subject, see Goodyear's *Greek Refinements.*

[8] See preceding note.

[9] For opposite views, ably expressed, as to the worth of Roman architecture, see *The Mistress Art,* Sir Reginald Blomfield, and *Against Roman Architecture,* A. K. Porter, in *Beyond Architecture.*

[10] "The Colosseum is an entirely new departure made possible by the invention and use of concrete, employed not only in corridors and cells, even under the arena itself, but also in multitudes of raking (backward inclined) vaults, which formed the most indestructible foundations of each of the four tiers of seats reared one above the other, in a great ellipse, to the crowning colonnade. (Figs. 23, 24.) Greek architecture had been simple in appearance and self-evident in design, with columns standing on a stylobate below and supporting an entablature above. (Fig. 10.) Roman architecture, especially as carried out . . . in numerous amphitheatres, became complex in

appearance and hidden in design; for not only were columns placed in front of piers, but there were columns above columns, entablatures above entablatures, and arches above arches." (Fig. 20.)—Sir Banister-Fletcher.

[11] The following remarks by Rodin, himself one of the great sculptors, are of peculiar interest at this point.

"In the mystic rhythm of the outline, a great sculptor, a Phidias, recognizes the serene harmony shed upon all nature by the divine wisdom; a simple torso, calm, balanced, radiant with strength and grace, can make him think of the all-powerful mind which governs the world."—Rodin's *Conversations.*

[12] Lord Bryce thus describes the early Christian basilica of St. Peter: "the oldest and stateliest temple of Christian Rome."

"In its plan and decorations, the spacious sunny hall, the roof plain as that of a Greek temple, the long row of Corinthian columns, the vivid mosaics on its walls, in its brightness, its sternness, its simplicity, it had preserved every feature of Roman art and had remained a perfect expression of Roman character. Out of the transept, a flight of steps led up to the high altar underneath and just beyond the great arch, the arch of triumph as it was called; behind in the semicircular apse sat the clergy, rising tier above tier around its walls; in the midst, high above the rest, and looking down past the altar over the multitudes, was placed the bishop's throne."

[13] The historian, Procopius, writing of Santa Sophia, exclaims: "Who could tell of the beauty of the columns and the marbles with which the church is adorned? One would think that he had come upon a meadow full of flowers in bloom; who would not admire the purple tints of some, and the green of others, the glowing red and glittering white, and those, too, which nature, like a painter, has marked with the strongest contrasts of color."

In another place he says: "It is singularly full of light and sunshine."

[14] C. E. Norton says, "Among the noble works of men, few more beautiful, few more venerable adorn the face of the world" (than St. Mark's).

[15] The following four testimonies to the character of Gothic architecture, coming from men so different, are impressive.

"A Gothic church is the most living of all man's creations, for it is as perfectly organized and articulated as a human body."—Ralph Adams Cram.

"A Gothic cathedral is surely the most wonderful work which mortal man has yet achieved, so vast, so intricate, and so profoundly simple. . . . It is the only thing in the world that is vast enough and rich enough."—Nathaniel Hawthorne.

"How often the evening light with its pleasant stillness has refreshed my eyes, wearied by close looking, as it melted the countless parts into vast masses, and these stood before my very soul in their simplicity and greatness. What a fresh impression the cathedral made upon me in the morning haze, how joyfully I stretched forth my arms to it, and beheld the mighty and harmonious mass full of life down to the minutest part."—Goethe.

"The truth about Gothic is, first, that it is alive, and, second, that it is on the march. It is the church militant. It is the only fighting architecture. All its spires are spears at rest; all its stones are stones asleep in a catapult."—G. K. Chesterton.

[16] "The man, the artist, the individual, are lost and disappear in those great masses, leaving no name behind. Human intelligence is there to be traced only in the aggregate. Time is the architect, the nation is the builder."—Victor Hugo.

[17] "Hugo," says W. R. Lethaby, "is one of the dozen or two people who have ever really *seen* Gothic art, and his description rises to almost a shriek in its clear intensity of understanding."

Of the Cathedral of Paris, Victor Hugo says: "A vast symphony in stone, if we may so express it—the colossal work of a man and of a nation—combining Unity with complexity . . . the prodigious result of a draft upon the whole resources of an era—in which upon every stone, is seen displayed, in a hundred varieties, the fancy of the workman disciplined by the genius of the artist, a source of human creation, in short, mighty and prolific as the divine Creation, of which it seems to have caught the double character—variety and eternity."

Viollet-le-Duc says: "They made their Christian church an epitome as it were of the Creation—an assemblage of all created things—a sort of universal epic in stone."

[18] Of the endless things written of Chartres none is truer, few are so intensely true as this:

"On the whole, as a combination of high merits, religious and spiritual, artistic as architecture; technical as engineering; for color, form, and thought; for elevation of idea and successful subordination of detail; I suppose Chartres is now the finest thing in the world."—Henry Adams.

[19] Of Westminster Abbey in particular, and mediæval building in general it would be hard to find a more succinct account than this:

"In the stillness and solemn light and mystery of the great Abbey we may recover that sense of unity and repose too often disturbed in modern buildings. It is there if anywhere, we may

'Forget six centuries overhung with smoke,
Forget the snorting steam and piston stroke,'

even as our last poet and craftsman, William Morris, bade us in the introduction to *The Earthly Paradise.* It is there . . . we feel and see the work of many minds and many hands, the skill and imagination of many generations of artist craftsmen speaking to us from the carved stone and wood when architecture and decoration were one. . . . Unity of sentiment, solemnity, splendor—these should be the dominant qualities in the artistic expression of great public buildings."—Walter Crane.

[20] Speaking of this entombment of the Virgin, C. H. Moore says: "Such skilful treatment of form, and such beauty of modelling, had not before been seen since the ancient classic times. And here again the likeness to certain qualities of Greek art is both remarkable and instructive. It is a fundamental likeness, showing itself in those finer peculiarities of composition and execution which escape the merely imitative workman but are natural to the workman who has been bred on traditional principles. . . . The Greek in his mature development, demanded physical beauty. In drawing from nature his materials, whether to give worthy embodiment to his conceptions of gods and heroes, he rejected, for the most part, all that was not outwardly beautiful. Selection with him was an inborn principle and a constant habit. The Gothic artist, on the contrary, saw that charm may coexist with bodily imperfection: and although he exercised a

spirit of choice, this choice was not determined by exclusive regard for physical qualities. It sought after an expression of the spirit which may lend an interest to the sculptor's work superior to that of mere perfection of form. But while thus differing in their respective aims and apprehensions there is nevertheless a close and interesting kinship between the Greek sculptors of antiquity and the Gothic sculptors of the Ile-de-France in the thirteenth century. They exhibit a similar understanding, though a different choice, of the elements of form; and a similar sense of the treatment which the ends of plastic art demand. It is this similarity of artistic feeling and executive instinct, finding expression under changed conditions in new forms, which gives the likeness to Greek art that we recognize in this sculpture of the portal of the Virgin, and in so many other examples of Gothic art."

[21] *To a Missal of the Thirteenth Century,* by Austin Dobson, contains much, which is as true as it is pretty, in respect to mediæval illumination.

"Missal of the Gothic age,
Missal with the blazoned page,
Whence, O Missal, hither come,
From what dim scriptorium?

Whose the name that wrought thee thus,
Ambrose or Theophilus,
Bending, through the waning light,
O'er thy vellum scraped and white;

Weaving 'twixt the rubric lines
Sprays and leaves and quaint designs;
Setting round thy borders scrolled
Buds of purple and of gold?

Ah!—a wondering brotherhood,
Doubtless, by that artist stood,
Raising o'er his careful ways
Little choruses of praise;

Glad when his deft hand would paint
Strife of Sathanas or Saint,

Or in secret coign entwist
Jest of cloister humorist.

Well the worker earned his wage,
Bending o'er the blazoned page!
Tired the hand and tired the wit
Ere the final Explicit!

Not as ours the books of old—
Things that steam can stamp and fold;
Not as ours the books of yore—
Rows of type, and nothing more.

Then a book was still a Book,
Where a wistful man might look,
Finding something through the whole,
Beating—like a human soul.

In that growth of day by day,
When to labor was to pray,
Surely something vital passed
To the patient page at last;

Something that one still perceives
Vaguely present in the leaves;
Something from the worker lent;
Something mute—but eloquent!"

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